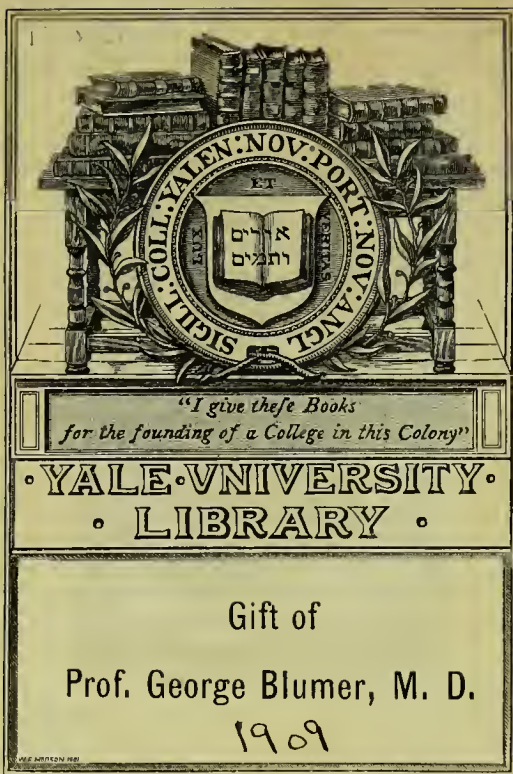


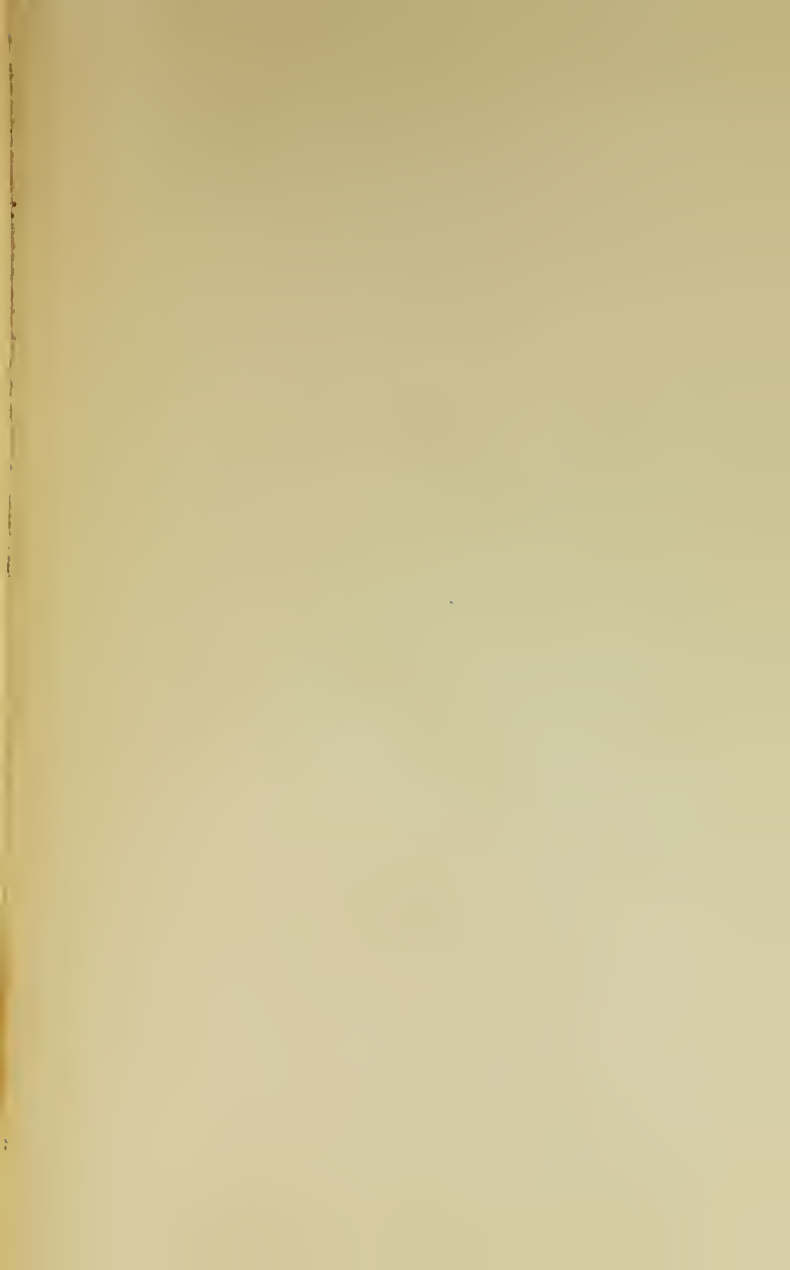
PSYCHOLOGY APPLIED
TO MEDICINE

INTRODUCTORY STUDIES

DAVID W. WELLS, M. D.



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Psychology Applied to Medicine

Psychology Applied to Medicine

Introductory Studies

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Preface

THE present essay has developed as a result of several years' experience lecturing to medical students.

The matter presented is an attempt to bridge over the gap between psychology and medicine. Medical education in the past has undoubtedly tended toward an ultramaterialistic conception of biology. The psychological aspect has been postponed not merely to a postgraduate period, but more often to a postpractical period, — a very proper study for the veteran *after* his years of experience.

Psychology is no longer merely a cultural study, but is the means of solving many practical problems presented to the physician. The subject should therefore be *opened up* to the undergraduate, at least in an elementary way. This gives him a better understanding of his own mental processes, which will in turn broaden his conception of the factors which make for health and happiness.

Most standard works on psychic matters pre-

suppose previous elementary knowledge of the subject on the part of the reader. With a majority of medical students this is not the case, and it is for his use especially that these introductory studies are presented.

Medical technicalities have been avoided as far as possible, in order that the book may prove interesting to that constantly growing class of the laity, which recognizes an underlying truth in psychic therapeutics.

Free use has been made of the available authorities, to whom, it is hoped, due credit has been given. It would be presumptuous to claim to present many new ideas, but it is hoped that the grouping of facts and theories may accomplish the purpose of the author, namely, to prepare the reader's mind to take up with greater satisfaction the many erudite and comprehensive works on kindred subjects.

It may seem to some readers that too much space has been given to the psychology of sight. In extenuation it should be remembered that a specialist can hardly fail to exaggerate the importance of his own limited field of practise.

Three chapters have been devoted to hypnotism in an attempt to sum up the essentials of the history, phenomena, and theories. Every physician should have a working knowledge of this subject, whatever his opinion may be as to the advisability of practising it.

The great subject of mental healing in its various

forms is a living issue which every physician has to meet. The proposition that “ *all* disease is mental ” seems so absurd to the medically trained man, that he is apt to ignore the fact that *some* disease is mental.

It is admitted that the profession has been engrossed with the *physical* side, discovering the principles of hygiene, aseptic surgery, antitoxin, scientific medicine, etc. It has not given attention to the *psychic* side, but there is evident an increased interest, and a few medical schools have established chairs in psychotherapeutics.

D. W. W.

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Contents



CHAPTER I

PAGE

REASON AND INSTINCT

Books recommended: James, "Psychology," Henry Holt; Donaldson, "Growth of Brain," Scribners; Sandford, "Experimental Psychology," Heath; Waldstein, "The Subconscious Self," Scribners; Bramwell, "Hypnotism," Lippincott; Sidis, "Psychology of Suggestion," Appleton; Sidis, "Multiple Personalities," Appleton. — Modern psychology is becoming an important branch of medicine, because it is recognized that "no mental modification ever occurs which is not accompanied or followed by bodily change." — Cerebration is accompanied by a temporary association and grouping of nerve cells, but thought is *not* a physical matter. — Development of nervous system a part of organic evolution. — Psychic missing links. — Instincts, common to man and beast. — Man alone possesses reason. — "No action but such as shows a choice of means can be called indubitable expression of mind." — Recepts and concepts. — Man has three sets of impulses: (1) Congenital reflexes, (2) acquired reflexes, (3) reason 1-15

CHAPTER II

HABIT

Habit. — Human instincts are transient unless developed into habits. — "As the twig is bent the tree inclines." — Habits are reflex arcs, which like electric currents follow

the path of least resistance. — The development of habits. — The moral significance. — "Man is a mere bundle of habits." — The concatenated impulse; economic value. — Professional habits. — Intelligent reading is wise skipping. — The conscious and subconscious; relationship. — The "Moment Consciousness." — Sleep a dissociation of few or many nerve centers. — Dreams are sleeping hallucinations; duration short. — Caused by some centripetal stimulus, somatic or external. — Infinite resources of the subconscious. — Wonderful memory; how to utilize it. — A possible explanation of genius. — Geniuses not well balanced. — Mental epidemics. — Concentration: *in* the crowd but not *of* it 16-34

CHAPTER III

SENSATION

Sensation. — Evolution of the special senses. — Doctrine of relativity: noumenon, phenomenon. — Limitations of sense perception. — The threshold. — The greatness and littleness of human intellect. — Special senses, a refinement of tactile sense. — The outward reference of sensation. — The correlation of the senses. — Visual perceptions. — The inverted retinal image, current explanation of erect vision: tactile experience reinverts visual sensation; incorrect, because not analogous to other special senses. — First sight of congenitally blind is always erect. — Mr. Hanna's experience. — Man ignorant of retinal image. Each mathematical point of object is *referred back* to its proper place, and we *see* not the retinal image, but the object itself in space 35-54

CHAPTER IV

EXPERIMENTAL PSYCHOLOGY

The blind spots; the two optic discs. — Retinal shadows: erect, because cast by objects too near the eye to form image on retina; outward projection of, produces inverted image. — Outward reference of tactile sense; flexible

cane. — Monocular estimation of distance. — Difficult without parallax. — Law of corresponding points. — Each ganglion cell two neurons, divide for both retinae. — Orientation, with prism. — Diplopia : — physiological at distances farther or nearer than point fixed. — Analogy of digital tactile sense. — Binocular estimation of distance. — Fusing successive double images. — Coördination of convergence and accommodation. — Stereoscopic perspective. — Pictures correspond to right and left retinal images. — Convergence required to fuse, determines distance; convergence excessive, nearness; convergence slight, distance. — May overcome mathematical perspective. — Binocular vision an acquired faculty. — Fusion training. — The amblyoscope. — Phoro-optometer stereoscope. — Controlled reading	55-65
---	-------

CHAPTER V

HYPNOSIS — HISTORICAL

Hypnotism. — Historical. — Neuro - hypnotism. — Nerve sleep, so called by Braid, 1843. — Phenomena are as old as civilization. — Early religions show many instances. — Evident in religious fanaticism of to-day. — Mesmer. — "De Planetarium Influxa," 1776. — The action and virtue of animal magnetism. — The Paris establishment; mystery. — Investigation by Academy of Sciences: "Not worthy of further scientific investigation." — Second investigation of mesmerism. — Eliotson, 1837, University Hosp., London. — Resignation and publication of journal. — Esdaile, 1845, India. — Painless surgery. — Braid, 1843, "Neurypnology." — Rechristened "Hypnotism." — Result of subjective causes. — Liébeault, 1864, Nancy, so-called "school." — Charcot, 1878, Salpêtrière school. — Society for Psychic Research, 1882, International. — Bramwell, England, best living exponent. — Quackeboss, New York, moral reformation. — Morton Prince, Boston, multiple personalities. — Petersen, Boston, translator of Wetterstrand. — Sidis, Brookline, "Psychology

of Suggestion," "Psycho-pathological Researches," "Multiple Personality." — Methods of hypnotizing. — Physical means not essential but useful. — Patient should be told what to expect. — Narcotics and anesthetics. — Susceptibility, almost universal. — Well-balanced individuals best subjects. — Hysterical and weak-willed difficult. — Hypnotism a <i>physiological</i> function	66-80
---	-------

CHAPTER VI

HYPNOSIS — PHENOMENA

Hypnosis. — Phenomena. — Classification, difficult and somewhat arbitrary. — Mild, catalepsy, conclusive evidence of hypnosis. — Deep, somnambulism, hallucinations accepted. — Catalepsy unwise to exceed at first attempt; sufficient for slight analgesia; sufficient for therapeutic suggestions. — Anesthesia not practicable for general surgery, because not absolute in more than ten per cent. — Character and frequency of pulse may be controlled. — Suggestibility increased, raise of threshold. — Amnesia the rule, but subject to suggestion. — The alert stage, seemingly inconsistent with sleep. — Hallucinations: positive, negative; <i>en rapport</i> with operator, but others may be introduced. — Subject reasons deductively, but not inductively. — Post-hypnotic suggestions; appreciation of time. — Automatism, not absolute, subject may refuse harmless suggestion. — Criminal suggestions, popular literature responsible for belief in; mistaken deductions from paper dagger experiment. — Refinement of moral sense. — The higher self: avoid being deceived. — Precautions in conducting experiments: avoid self-deception	81-95
--	-------

CHAPTER VII

HYPNOSIS — THEORIES

What is hypnotism? — Theories. — 1766, Mesmer, animal magnetism. — Influence of heavenly bodies. — 1851, Professor Gregory, "Animal Magnetism." — Influence	
---	--

of inanimate bodies. — Confirms Reichenbach's odylic force. — Operator's will sufficient to control subject. — Defends phrenology, but suggestion *will* produce same results. — 1843-55, Braid, three distinct theories: (1) Physical theory, "hypnotism" manipulation of cranium produces characteristic phenomena; (2) Substitute mono-ideism for hypnotism, preconceptions of subject, dominant ideas, suggested by operator, magnets, metals, and sealed medicines, inert except as vehicles of suggestion; (3) Double consciousness. — Modern theories. — Charcot, Salpêtrière, the discordant note. — Responsible for modern prejudices. — Bernheim, suggestion, the all-sufficiency of. — Sidis, laws of suggestibility. — Myers, subliminal consciousness. — Volition, subject *not* unconscious. — Supra-normal: clairvoyance, clairaudience, prevision, telepathy, the problem of personality 96-107

CHAPTER VIII

PSYCHOTHERAPEUTICS

Psychotherapeutics. — Definition of therapeutics. — Drugs, surgery, orthopedics, electricity, mechanotherapy, refraction, hydrotherapy, massage, in all a *physical* element. — Psychotherapeutics, elimination of the *physical* agent. — Man a suggestible animal. — Historical: "Thy faith hath made thee whole;" royal touch; shrines; prayer cure; Christian Science; "mental healing;" Whipple, New York; Newcomb, Boston. — Claim everything, but refuse to substantiate. — Silent treatments, accord with Sidis' law. — Indirect suggestions, accord with Sidis' law. — Bernheim, a-hypnotic suggestion. — Hypnosis necessary to overcome auto-suggestions. — Method of giving treatments. — Sphere of psychotherapeutics: subconscious memory of pain, hallucinations, insomnia, neuralgia, constipation. — Drug habit and degeneracy, Quackenboss. — Dubois: nervous diseases. — Organic disease? — Anderson's "muscle bed." — Thinking out an exercise. — An adjunct to general medicine 108-124

CHAPTER IX

PSYCHIC ELEMENT IN MEDICINE

The psychic element in the practise of medicine. — The personality of the physician. — Genuine good-will. — Healthful suggestions. — Suggestions adverse to health. — Diet. — Suggestion present in all forms of therapeutics: in surgery, in refraction, in electrotherapy, in massage, in materia medica. — The hidden suggestion. — Popular belief in efficacy of drugs. — “*Post hoc ergo propter hoc.*” — “It cured me.” — Profession not given to critical analysis. — Responsible for erroneous theories. — Shattuck: “Some of our patients get well.” — Flint’s law, the natural history of disease. — Percy: eight therapeutic influences: (a) Natural history of the morbid processes; (b) The recuperative energies of the organism; (c) The favorable agencies of hygiene; (d) The power of personal magnetism, in the practitioner; (e) Suggestion and auto-suggestion; (f) Faith; (g) Courage; (h) Drugs. — Attempt to eliminate suggestion from drug pathogenesis. — The reproving by the Am. Hom. O. O. and L. Soc. — The placebo, a vehicle of suggestion . 125-136

Psychology Applied to Medicine

CHAPTER I

SUMMARY

Books recommended: James, "Psychology," Henry Holt; Donaldson, "Growth of Brain," Scribners; Sandford, "Experimental Psychology," Heath; Waldstein, "The Subconscious Self," Scribners; Bramwell, "Hypnotism," Lippincott; Sidis, "Psychology of Suggestion," Appleton; Sidis, "Multiple Personalities," Appleton. — Modern psychology is becoming an important branch of medicine, because it is recognized that "no mental modification ever occurs which is not accompanied or followed by bodily change." — Cerebration is accompanied by a temporary association and grouping of nerve cells, but thought is *not* a physical matter. — Development of nervous system a part of organic evolution. — Psychic missing links. — Instincts, common to man and beast. — Man alone possesses reason. — "No action but such as shows a choice of means can be called indubitable expression of mind." — Recepts and concepts. — Man has three sets of impulses: (1) Congenital reflexes, (2) acquired reflexes, (3) reason.

PROFESSOR LADD has defined psychology as "the science which describes and explains the phenomena of consciousness."

While abstruse logic and cosmic philosophy are

still legitimate departments of the subject, the new psychology is not strictly metaphysics, it is a physiological psychology, in fact a mental physiology. The very word *experimental*, as applied to the subject, suggests appliances and individual research quite beyond the scope of logic.

It is a recognition of the law laid down by Professor James, that "no mental modification ever occurs which is not accompanied or followed by a bodily change," which renders it imperative that a physician should be well grounded in the fundamental truths of psychology.

The comprehensiveness of the subject is overwhelming. The present essay is an attempt to present only a few well-recognized facts which bear directly on the subjects of physiology and hygiene.

It may be well at the outset to have a clear idea of our limitations. The old controversy between the spiritualist and the materialist is perhaps not yet ended, but there has been a decided reaction from the ultramaterialism of fifty years ago. The attempt to *identify* thought and molecular motion has few defenders to-day. It used formerly to be said by this class of thinkers: "The brain secretes thought as the liver secretes bile." This is a distressing confusion of two distinct realms in nature, — the psychical and the physical.

Recent developments in neurology have thrown much light on the phenomena of brain activity. Cerebration is now thought to be accompanied by a

temporary association of nerve cells; but were we able to trace the nervous impulse, thru all its intricacies, to the brain centers, did we know the exact molecular changes which cause the efferent impulse, — the *nature* of a thought would be as much a mystery as ever. Indeed it is doubtful if the question is ever solved by the finite mind. Tyndall said: "There is no fusion possible between the two classes of facts. The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable."

It is not claimed that the unknown is necessarily the *unknowable*, but it is a line of investigation which cannot be taken up in any superficial way. This confession of ignorance is in fact a great step toward a higher knowledge. It is a refined agnosticism. The fact seems to be that the brain is the *organ* of the mind, just as the body is the organ of the brain.

SENSATION

Simple protoplasm possesses irritability, contractility, and elasticity — that is, it has sensation equal to its needs. Professor Sutherland has said: "A nervous system is an arrangement by means of which an organism becomes conscious of its environment (food, friends, and foes) and adapts itself thereto."¹ This is a very comprehensive definition suited to any form of life except unicellular organisms, and even here, altho there is no aggregation of nerve

¹ Anatomical Lectures, B. U. Med. School.

elements into a system, yet monocellular forms react to touch, pressure, etc.

When the ameba envelops and ingests the food particle that touches its periphery, it evidences a "consciousness of environment and adjustment thereto." It is evident that the word consciousness is here used in a general sense. Some psychologists have restricted the term to define a human attribute only, and others have asserted that consciousness without a central nervous system is impossible. From a biological standpoint all life is conscious.

REASON AND INSTINCT

By studying the evolutionary scale of life as it exists to-day, it is seen that the nervous system, like its accompanying organism, progresses from the simple to the relatively complex, till in man it reaches a development capable of what we call reason.

Undoubtedly psychology has drawn too sharp a line between reason and instinct. The reaction from this was the contention that the lower animals *reason*, the difference being one of degree, not of kind. The earlier idea that reasoning was an attribute of man only was natural in preëvolutionary times, and was based on the belief in the immediate creation of perfected organisms, the so-called special creation, because special creations had distinct endowments. The evolutionist maintains that since the establishment of the general law, "from the

simple to the relatively complex," the burden of proof rests on him who claims that at any time or place it ceases to be of universal application.

Perhaps no one has a right to affirm that gravitation is of universal application, and yet experience warrants one in assuming its universality as a working hypothesis till an exception is proved. So it is assumed that the development of the nervous system has been one continuous upward movement, till we have the mind of man. This would lead us to expect to find the difference between reason and instinct one of *degree*, and in the last analysis this may be so. Evolution teaches that certain species have become side-tracked, and are forever consigned to inferior positions. These are the animals whose mentality never rises above the plane of instincts. As morphological connecting links are wanting, so in a still more emphatic way is there a gulf between the highest instinct and the human mind.

Professor James says: "No actions but such as are done for an end, and show a choice of means, can be called indubitable expressions of mind." Accepting this criterion, that in order to be classed as reason an act must "show a choice of means," it is possible to draw a sharp line between reason and instinct.

It is somewhat generally believed that instincts are attributes of the lower animals only, and the fact is overlooked that man is richly endowed in

this direction, especially in infancy. Instincts are impulses. "Theirs not to reason why." In physiology we call them reflexes. The human infant is born with the instinct to suck fully developed. The tendency to clasp any object that comes in contact with the fingers or toes is very marked. In fact, this instinct is stronger a few hours after birth than at any later period.

New-born children are able to sustain their own weight by grasping a lead-pencil, often with only one hand. The evolutionary bearing of this is very interesting, and shows very beautifully how natural selection could, in the lower animals, propagate this impulse. The young of the chimpanzee whose grasp of the mother was strongest would by this means escape destruction when pursued by an enemy. Of course in man the law of the "survival of the fittest" is operative in a lesser degree. The transiency of many infantile instincts, when not exercised, will be again referred to under the subject "Habit." Fear and love we possess in common with the animals. The sexual passion is perhaps one of the strongest examples.

DO ANIMALS REASON?

Let the great John Burroughs answer it.

"Apropos of the question, 'Do animals think?' a correspondent, writing from Washington, says that I deny this power to the lower animals because I use the word in a too restricted sense. He then

proceeds to say that if we use the word 'chin' to signify 'exclusively a portion of the human face, meaning that portion which is extended perpendicularly downward from the mouth, we would hesitate to say that lower animals have chins. So if we define "laugh" as spreading the mouth in merriment we could not say that animals laugh.'

"I am quite ready to admit that animals think in as strict a sense as they have chins or as they laugh. A feeling of play and merriment they certainly have, but this feeling is practically entirely physical. I don't suppose an animal could appreciate a joke, or the comic, or the absurd. Man is the only animal that laughs or weeps, though tears may run from the eyes of a suffering beast. And the chin of a bird or beast is a very rudimentary affair indeed.

"Take the case of the little yellow warbler when the cowbird drops her egg into its nest — does anything like a process of thought or reflection pass in the bird's mind then? The warbler is much disturbed when she discovers the strange egg, and her mate appears to share her agitation. Then after a time, and after the two have apparently considered the matter together, the mother bird proceeds to bury the egg by building a new nest on top of the old one. If another cowbird's egg is dropped in this one, she will proceed to get rid of this in the same way. This all looks very like reflec-

tion. But let us consider the matter a moment. This thing between the cowbird and the warbler has been going on for innumerable generations. The yellow warbler seems to be the favorite host of this parasite, and something like a special instinct may have grown up in the warbler with reference to this strange egg. The bird reacts, as the psychologists say, at sight of it, then she proceeds to dispose of it in the way above described. All yellow warblers act in the same manner, which is the way of instinct. Now if this procedure was the result of an individual thought or calculation on the part of the birds, they would not all do the same thing; different lines of conduct would be hit upon. How much simpler and easier it would be to throw the egg out — how much more like an act of rational intelligence. So far as I know no bird does eject this parasitical egg, and no other bird besides the yellow warbler gets rid of it in the way I have described. I have seen a green-backed warbler rearing the young cowbird.

“Another correspondent is sure his dog thinks when he sits up in front of him while he is reading, and taps him on his back or leg as a reminder that he wants the ball in his master’s pocket to play with; and that his parrot thinks when, on hearing him enter the house, it begins savagely to bite its cage and to make hideous noises, all with a view to obtaining its freedom, so that it can make its way to its beloved master, and caress and play with him. If

such things indicate powers of thought, then nearly all animals think. The bee does when it goes forth from the hive in quest of honey; the big midsummer spider does when it shakes its net to frighten you away; the mother bird does when she flutters over the ground at your feet to decoy you away from her nest, etc. But none of these acts can properly be called the result of thinking.

“When a parrot takes a crust of bread and soaks it in its cup of water before eating it, that looks much more like the result of a mental process.”¹

There are many instances of animal sagacity which *seem* to show a certain degree of reasoning.

The following is quoted by Professor James:

“I have two dogs, a small, long-legged pet dog, and a rather large watch-dog. Immediately beyond the house court is a garden, into which one enters through a low lattice gate which is closed by a latch on the yard side. This latch is opened by lifting it. Besides this, moreover, the gate is fastened on the *garden* side by a string nailed to a gate-post. Here, as often as one wished, could the following sight be observed. If the little dog was shut in the garden and wanted to go out he placed himself before the gate and barked. Immediately the large dog in the court would hasten to him and raise the latch with his nose, while the little dog on the garden side leaped up, and catching the string in his teeth, bit it thru.

“Certainly reasoning here seems to prevail.

¹ *Outing Magazine*, 1905.

“ In face of it, however, and altho the dogs arrived of themselves and without human aid at the solution of the gate question, I am able to point out that the complete action was pieced together out of accidental experiences, which the dogs followed, I might say, unconsciously.

“ While the large dog was young, he was allowed, like the little one, to go into the garden, and therefore the gate was usually not latched but simply closed. Now if he saw any one go in he would follow by thrusting his snout between the gate and the post, and so pushing the gate open. When he was grown I forbade his being taken in, and had the gate kept latched. But he naturally still tried to follow when any one entered, and tried in the old fashion to open it, which he could no longer do. Now it fell out that once, while trying, he raised his nose higher than usual, and hit the latch from below, so as to lift it off its hook, and the gate opened. From thenceforth he made the same movement of the head when trying to open it, and of course with the same result. He now knew how to open the gate when it was latched.

“ The little dog had been the large one’s teacher in many things, especially in the chasing of cats, and catching of mice and moles, so when the little one was heard barking, the other always hastened to him.

“ If the barking came from the garden he opened the gate to get inside.

“ But meanwhile the little dog, who wanted to get

out, the moment the gate opened slipped out between the big one's legs, and so the *appearance* of his having come with the intention of letting him out arose, and that it was simply an *appearance* transpired from the fact that, when the little dog did not succeed at once in getting out, the large one ran in, and nosed about the garden, plainly showing that he had expected to see something there.

"In order to stop this opening of the gate, I fastened a string on the garden side, which, tightly drawn, held the gate firmly against the post, so that if the large dog raised the latch, and let go, it would every time fall back on the hook, and this device was successful for quite a time, until it happened one day that on my return from a walk upon which the little dog had accompanied me, I crossed the garden, and in passing through the gate the dog remained behind, and refused to come to my whistle.

"As it was beginning to rain and I knew how he disliked to get wet, I closed the gate in order to punish him in this manner.

"But I had hardly reached the house ere he was before the gate, whining and crying most piteously, for the rain was falling faster and faster. The big dog, to whom the rain was a matter of indifference, was instantly on hand, and tried his utmost to open the gate, but naturally without success. Almost in despair, the little dog bit at the gate, at the same time springing into the air in the attempt to jump over it, when he *chanced to catch the string in his*

teeth. It broke and the gate flew open. Now he knew the secret, and thenceforth bit the string whenever he wished to get out, so that I was obliged to change it.”¹

If every story of animal intelligence could be carefully analyzed and the history of its development known it would probably be evident, as in this case, that the mentality displayed was hardly worthy the name Reason. There is an association of means and end. The dog remembered that a certain result followed a certain action. In the first instance, when the gate was not hasped, simply pushing against it caused it to open. Accidentally discovering that raising the hasp with his nose, the result — open gate — followed, simple memory of the association of the two occurrences caused him to repeat the movement. To this class of phenomena psychology has given the name Recept. This word is derived from Latin *re* (back), *capio* (to take), meaning something remembered.

This is in distinction from the larger word *Concept*, from the same root, but the prefix *con*, together, shows that it covers the *association* of things received. This term is applicable only to reasoning. In reasoning we put things together and pick out the essential quality of observed facts. In this instance, that the pushing of the gate must take place while the hasp was lifted, so that the hasp would not drop into its place again. Then there is formed in the mind a

¹ Psychology.

concept, the principle of hasps in general, and the test of a *concept* is the power to use the *idea* under similar circumstances.

This leads to Professor James' proposition: "The ability to deal with novel data is the technical differentia of reasoning." This is very well shown by the further history of the two dogs which I quote again:

"That the big dog in raising the latch did not in the least *know* that the latch closed the gate, that the raising of the same opened it, but that he merely repeated the automatic blow with his snout, which had once had such happy consequences, transpires from the following:

"The gate leading to the barn is fastened with a latch precisely like the one on the garden gate, only placed a little higher, still easily within the dog's reach.

"Here, too, occasionally the little dog is confined, and when he barks the big one makes every possible effort to open the gate, but it never has occurred to him to push the latch up. The brute cannot draw conclusions, that is, he cannot think."

These receipts might be defined as acquired instincts, or if that seems a contradiction of terms, acquired reflexes. It is certainly one step higher than the primary instincts, and is quite suggestive of the way in which our ancestors may have repeated certain actions till a tendency to do the same appeared in the offspring. The reason for many of our human instincts is now lost. Yet it never occurs to

us to question these actions in ourselves. "It takes what Berkeley calls a mind *debauched* by learning to make the natural seem strange, so far as to ask for *why* of any instinctive human act."¹

It was just said that the transmission of acquired habits *might* account for instincts, animal and human. This was the generally accepted view, altho it was recognized that the evidence was meager in the extreme. But in 1889 Weismann, of Freiburg,² published a strong denial, outlining a theory which increases the scope of natural selection.

Weismann denies that functional qualities are transmissible, denies that the blacksmith's son is capable of any greater physical development than he would have been had his father followed some sedentary profession.

This view has gained many adherents in the intellectual world, and while it would be out of place to introduce the argument here, it must be mentioned that Herbert Spencer was strongly opposed. The principle of inheritance of acquired characteristics is part of the groundwork of his Synthetic Philosophy, and in the later controversy³ with Weismann he held his ground manfully.

What we need is to bear in mind the fact that we are richly endowed with instincts, and that these form a basis from which are developed habits, habits

¹ James: Psychology.

² Essays upon Heredity.

³ *Contemporary Review*, September, 1893, October, 1894.

of reasoning as well as of bodily movements. Reasoning is also based upon experience both individual and ancestral.

Man may therefore be said to be dominated by three sets of impulses.

(1) Congenital reflexes.

(2) Acquired reflexes.

(3) Reason.

The second, acquired reflexes, is a somewhat arbitrary division, and its boundaries are difficult to determine. It is the transitional form, and, altho on its upper and lower sides it merges into the two extremes, its very existence tends to emphasize the gulf between instinct and reason. This difference is thus seen to be not merely one of *degree* but one of kind. The heights to which human reason may mount are indeed uncomprehensible to the common mind. The vast range of phenomena which a great mind can assimilate at a glance often makes him impatient with us common mortals who have to grope our way step by step. It is frequently quoted that Bowditch, who translated one of Laplace's books, said: "Whenever his author prefaced a proposition by the words 'It is evident,' he knew that many hours of hard study lay before him, ere it became evident to him."¹

¹ James : Psychology.

CHAPTER II

SUMMARY

Habit. — Human instincts are transient unless developed into habits. — “As the twig is bent the tree inclines” — Habits are reflex arcs, which like electric currents follow the path of least resistance. — The development of habits. — The moral significance. — “Man is a mere bundle of habits.” — The concatenated impulse; economic value. — Professional habits. — Intelligent reading is wise skipping. — The conscious and subconscious; relationship. — The “Moment Consciousness” — Sleep a dissociation of few or many nerve centers. — Dreams are sleeping hallucinations; duration short. — Caused by some centripetal stimulus, somatic or external. — Infinite resources of the subconscious. — Wonderful memory; how to utilize it. — A possible explanation of genius. — Geniuses not well balanced. — Mental epidemics. — Concentration: *in* the crowd but not *of* it.

HABIT

PREYER has said that instincts are observable in the human animal *only* in infancy. This may not be strictly true, yet the preponderance of the instinctive in early life has for us some very important lessons. The other fact of immense practical value is the *transiency* of these instincts. Take, for example, the sucking instinct. Every experienced nurse recognizes the importance of putting the baby to the breast before the milk comes. If this be omitted and if there be any delay in the natural food, it is often no easy task to teach a child to nurse. This is espe-

cially true of the lower animals, for there is evident in man a great lengthening of the period of infancy or helplessness.

As with the sucking instinct, immediate obedience makes continuance easy, so in a hundred ways instincts may be made permanent by *carrying out* the action, that is, by the establishment of a habit. The advantage of a lengthened infancy is the extension of the time of initiating habits.¹

Obviously our habits are not all formed in infancy, but the difficulty of the acquisition increases with age. The longer the infancy, the longer the period of plasticity, the greater the number of lines of thought and action which can be implanted.

“As the twig is bent the tree inclines” is a principle never lost sight of by educators and reformers.

With the majority of people moral habits formed in the “teens” become dominant thru life, while the period between twenty and thirty fixes the professional habits. This general truth need not discourage us in attempting the acquisition of new habits if we have a clear conception of the actions necessary to the formation of a habit.

Without considering the question of *whence*, we are constantly subject to impulses. This may be an impulse to whistle. Now two courses are open, the individual may or may not carry out this impulse. Whether or not he be a free moral agent does not

¹ See John Fiske's Essay : The Meaning of Infancy.

concern us. Neither is the question if the impulse be good or bad.

Yielding to the impulse, doing the thing impelled, makes it very much more probable that the next time that same impulse is felt, the action will follow. This establishes a path of motor discharge, which is perhaps the best *physiological* definition of habit. All reflex arcs follow this law, the sensation having gotten in, the efferent impulse probably follows the path of least resistance. We can imagine that with the initial impulse, like the brook trickling from a snow-bank, the slightest obstacle may divert its course, but the grooving effect soon converts this slight obstruction into a high bank, so that nothing less than a freshet can overcome the barrier.

It is not claimed that the psychical is absolutely predestined like the physical. Were it so, effort at a change would be unavailing. Here comes in the human will, the impulse from without, if you please. Given the impulse to change a habit, or to form a new one, the one essential is the *immediate action*, the breaking down of the barrier *for this once*. As Emerson puts it: "When the divine moment of the soul comes, leave your theory like Joseph his coat in the hands of the harlot and flee."¹

The next time this same impulse is felt, the previous action serves as a groove, be it ever so shallow. The moral implication is so much in evidence that it is difficult to wholly exclude it. Perhaps the

¹ Essay on Self-reliance.

easiest way to surmount the difficulty is to enlarge our definition of morals. Such aphorisms as "Man is a mere bundle of habits," and "Order is Heaven's first law," show that, after all, the really important thing is care in forming one's habits.

There is also an economic side to the question. Take, for example, the act of buttoning one's coat, it is really a very complicated composite of afferent and efferent impulses, and all done unconsciously. Watch the young child as he painfully learns each part of the process.

With the adult all that is necessary is the initial impulse, either conscious or unconscious. The resulting action of the contact of the finger with the buttonhole becomes the impulse for the next specific act, and so on thru the whole series. The psychological term for this is a concatenated impulse. The word is derived from *con* (together) and *catena* (a chain), meaning literally chained together.

It thus becomes apparent that, after the formation of the habit, cerebration has simply to concern itself with *one* impulse instead of the many to bring about a complicated series of movements. Were it not for this fact we could accomplish very little during a lifetime. But the act of yesterday becoming the habit of to-day, leaves time for further research and progress. Just in proportion as habit may become a strong ally, so it may also become a terrible enemy.

Professor James tells us that professional habits become fixed between the twentieth and thirtieth

years. What shall these habits be? Reading and study must occupy a large part of the physician's spare time. He should form the habit of extracting the important items from a mass of unimportant detail. Certain general principles apply, whether it be a current magazine or an exhaustive treatise.

Euclid is credited with the saying, "There is no royal road to geometry." Yet there *is* a royal *habit* to be cultivated, which will make the road easy to the acquisition of any subject. Nearly every book has a preface and a table of contents. Many people form the very bad *habit* of skipping both. This plunges one into the details of a subject without any comprehensive view. The logical habit is just the reverse. A general idea of a subject as a whole is the first essential.

One can seldom do better than to commence with the title-page, which furnishes information about the author, his position in the professional world, and some hint as to the reliability of his statements. The table of contents gives in a broad way the matter presented, and, what is also of equal importance, the logical sequence of the data and argument. Intelligent reading is said to be wise skipping, but *wise* skipping requires a general grasp, else the skipping is a dangerous habit. This habit will ensure the student against plodding thru a mass of detail, which he soon forgets because he fails to see its relation to the whole. The secret of remembering is this. Details are important only as they cluster

around and attach themselves to the main thoughts. This method of study will enable one to retain.

An educated man has been defined as "one who knows where to go to get information." This is in distinction from the person whose brain is full of jumbled incoherent facts. The relationship between phenomena should be carefully noted, perhaps it would be better to say the relationships between different sets of phenomena. Let them all be *concatenated*, then recollection becomes literally a recollection. One idea suggests another with which we have associated it, and so on thru the series. It is only necessary to remember the beginning of the chain, and the rest is suggested. This is the principle in most of the so-called "memory helps."

But above all is it necessary to read understandingly. One chapter read well is better than the whole book read badly. Evidently each man's ability to digest a given subject will depend upon his education and previous habit. Emerson has said: "He must take himself for better for worse as his portion, though the wide universe is full of good, no kernel of nourishing corn can come to him but through his toil bestowed on that plot of ground which is given to him to till."¹

The economic value of intellectual habits becomes apparent when it is understood that habits of mind, as well as of body functions, are soon relegated to the domain of the subconscious. Idiosyncrasies of

¹ Essay on Self-reliance.

thinking and talking are so much a matter of common experience that the importance of the subject has been very generally overlooked. The next time you are at a club meeting and some one is called upon to discuss a paper, it will be of interest to you to forecast and predict, not only the little mannerisms of address and phraseology, yes, even the argumentative machinery.

You may not know this man's opinion on the special subject at hand, but if he be a person to whom you have often listened, you can safely infer his method of taking up the subject. The relationships of any fact are so numerous, that one is almost sure to see *this* thing from the same point of view, as on other occasions he has seen *other* things. And the interesting part of it all is that the man himself seldom realizes that he has well-defined campaign plans ready made for all ordinary occasions.

The soldier knows, unconsciously (if you will allow that a thing can be known unconsciously), just what maneuvers a certain charge or retreat demand. His whole education from private to officer is a recognition of this principle. The story is told of an old soldier going home with his dinner. Altho having long since retired from service, the old subconscious habit was so strong, that when some one shouted "Attention!" his arms came down to the sides and his dinner dropped to the gutter. The ordinary explanation would be that he did it "without thinking." This is not far from the truth, if it

be added that he did it because he had previously thought and acted this way.

SUBLIMINAL CEREBRATION

It is such facts as these which have led to theory of "unconscious cerebration." A more modern name is the subconscious mind. The word subliminal is also used by some psychologists. To understand its applicability it should be dissected. The root is the Latin *limen* (a threshold). Threshold in metaphysics has come to mean the smallest stimulus to which a given sense organ will respond, for example, the lowest tone, about sixteen vibrations to the second, of which the ear is conscious, is the *threshold* of sound.

So in psychology subliminal means *under* conscious or subconscious. It is conceived that the mind is divisible, not by a hard and fast anatomical line, but physiologically into the conscious and subconscious.

The reflexes belong to the subconscious, they are actions laboriously thought out by prehistoric individuals, transmitted as impulses or mental grooves to posterity, with their automatic machinery in perfect running order.

It was said that the cleavage was physiological, but this does not mean that it is absolute. Many actions are ordinarily subconscious, yet are under control of the will, if given conscious attention. Individuals vary greatly in the classification of their actions, those which are subconscious in one being

impossible save by conscious thought in others. Moreover, in the same individual there is a constant shifting of the dividing line.

THE MOMENT CONSCIOUSNESS

The experiences of the moment, which Sidis calls the "Moment Consciousness," consist of that of which we are directly conscious, the fact upon which the attention is fixed, and all the other environmental facts which are also perceived by the senses. These impressions may not be intense enough to rise into consciousness, and yet are indelibly registered in the subconscious. The next moment another cluster of sensations is perceived, and a large part, perhaps all, of the content of the previous "moment consciousness" becomes subconscious.

The reverse of this process is equally true, subconscious memories by association loom up into consciousness, both prompting and modifying in a thousand ways the sensations of the conscious. As life experiences multiply, the stored up facts increase. The content of the present "moment consciousness" includes the essence of all previous "moments consciousness."

Moreover, it must not be assumed that a subconscious memory must rise into consciousness in order that it shall become an active factor. Cases of hallucination studied by Doctor Sidis show that oftentimes some forgotten psychic shock is sufficient to give rise to the mental aberration. This leads Sidis

to conclude that "hallucinations are *waking* dreams and that dreams are sleeping hallucinations." As brain activity is functional association of nerve clusters, so sleep is a *dissociation* of few or many brain centers, just as it is less or more profound.

As we know, some people seem to sleep "with one eye open," being aroused by the slightest unusual sound, while others fall into a profound lethargy. Dreams do not occur in the sound sleeper, except when he is in the transition stage between sleeping and waking. We are often conscious of having dreamed, but find it impossible to recollect the subject matter. At other times the dream is so vivid as to waken one with a start.

Sidis argues that the cause is always a centripetal stimulus, that is, something from outside the brain, since the brain does not originate impressions. For example, indigestion giving rise to pain may cause in the dissociated cell groups of the brain a sleeping hallucination of a gastric ulcer, and cold applied to a sleeper's feet call forth a dream of an arctic expedition.

A recent experience of the writer is such a perfect illustration of this point that he cannot refrain from introducing it.

At a dinner with some medical friends a large dish of anchovies was allowed to remain on the table during several courses. Without thinking of how many I was eating I continued nibbling during the meal.

Before going to sleep I was not conscious of any unpleasant sensations from the indulgence, but in the middle of the night I dreamed that I was seated at a café table, and opposite sat my friend of the evening.

I do not remember giving the order, but the waiter brought to my friend a large glass bowl which would hold two or three quarts. This was filled with some light pink sherbet, and completely encircling the dish was a row of most luscious strawberries.

With some impatience I asked the waiter why he did not serve me with the same. He replied, "In just a minute, sir."

My friend very politely said he would wait till I was served, but I insisted that he should not.

He ate very leisurely, and all the time my thirst increased, and with equal rate my anger rose at that waiter and his repeated "Yes, sir, just a minute." But the climax came when he finally put before me a bowl similar to the one from which my friend was eating, but alas! empty.

To add to my exasperation, the bowl had a red stain around the top where the strawberries had been. My anger became uncontrollable, and I waked with such a parched mouth that I immediately drank off several glasses of water.

The short duration of the dream state, notwithstanding the varied experiences thru which one passes, is well illustrated by the following account which was given the writer by a telegraph operator.

“ One evening in the summer of 1882, or possibly 1881, while taking press report for the *Rochester Herald*, at Rochester, N. Y., I had what appears to me to be a somewhat unusual experience, — so unusual, in fact, that its impression has been lasting.

“ At the time of this occurrence I had been doing some extra work, and was feeling considerably worn out and extremely sleepy.

“ At about ten o'clock P. M. I was engaged in taking a baseball score by innings. The sending of these scores, I will state for the benefit of the uninitiated, would require not to exceed one-half a minute on a wire worked at the speed the report wires are worked. I had taken the first team score, which would appear about as follows:

“ Chicago — 000 010 001 — 2

“ Boston * — 000 001 000 — 1

“ At the point marked * I dropped asleep. I dreamed that I started on a long vacation trip, New York being my first stopping-point. The trip from Rochester to New York City over the Central, especially that part from Albany down the Hudson, with its beautiful scenery, was one of the many details noted.

“ After reaching New York I seemed to have plenty of time to spare, and this was spent in visiting points of interest, calling on friends and acquaintances. About two weeks were spent in this manner, when I started for Europe.

“ The voyage across the Atlantic was a pleasant

one, the sightseeing in London was intensely interesting, and the return trip all that could be desired, in fact, the whole trip was delightful, the more so as I seemed to have no cares.

“The entire trip occupied about six weeks, and I seemed to be greatly benefited thereby.

“When I awoke my first thought was that I had about finished the night, and instinctively reached for the telegraph-key to find out how much ‘report’ I had lost, supposing, of course, that I was in for trouble. Upon asking New York what he was sending he replied: ‘Ball scores, Chicago-Boston.’ I started him on the Boston score, which I had put down in very small figures (as per above) during my sleep.

“How it was done, I will make no attempt to explain, I simply give it up. The figures were there, and furthermore they were *correct*.

“The actual time consumed by me in taking this imaginary trip could not have exceeded ten seconds. I had absolutely missed nothing in the report. Neither had the circuit been interrupted in any way, which I took pains to verify. The explanation of all this, I leave to those better informed on such matters.

“My friend Mr. Lee,¹ to whom I related this little experience at about the time it occurred, will doubtless remember it, as will also others, were it really worth the trouble to look them up.”

¹ Mr. Lee is a friend of the author.

A good deal is being said just now about the education of the subconscious. In mercantile affairs a man is spoken of as a good organizer, which means that he can call others to work out certain details, confining his attention to the larger concern, and the relation of the whole to the outside world.

So in the psychic realm, in proportion as one is developed intellectually has he relegated to the subconscious the routine work of life. So long as things run smoothly in his mental workshop he pays no attention to it. Should an accident happen in any department, the central office is immediately informed, and the necessary steps taken to meet the emergency.

So the education of the subconscious is simply the formation of correct habits, and, as was said before, the formation of a habit requires acting on the impulse. Failing to act, the *next* time the impulse is felt, its impulsiveness is lessened, the very failing to act has established a *habit* of *inaction*.

Impulsiveness must, it is true, be curbed by moderation, but excessive indecision is worse.

Many a man will fire with enthusiasms over some project, but failing to act, soon cools down to a state of disinterestedness. People who devote an excessive amount of time to fiction and the theatre, often mistake their sympathy for the hero for a real virtue. This sentimentality soothes their consciences in lieu of genuine philanthropy, and their fine impulses are barren of any actual good deeds.

Most of our evidence of the outer world comes thru the eyes and ears, that is, every object pictured on the retina and every sonorous vibration the unfailing afferent nerves transmit to the brain. There are many examples of the fact that "having eyes we see not and having ears we hear not," at least consciously.

A well-authenticated case illustrative of this is as follows: A lady was startled by seeing on the wall, as if thrown by a flash-light, a notice of the death of a friend. The wording was such as would appear in a newspaper notice. Naturally she was very much startled, and the wonder grew when the inquiry revealed that the person had died as stated.

Reference to the morning paper discovered the identical notice. This paper she had read. Moreover, she remembered having read something else which was in the same column, and the presumption is that the notice was also read in what we commonly call an "absent-minded way." The *conscious mind* was certainly absent.

Every one has had the experience of reading on, sometimes for pages, and then suddenly discovering that he had been thinking of something entirely foreign to the matter read, of which he was really ignorant. Probably it was registered in the subconscious, but ordinarily the subconscious is a sealed book, until some abnormal experience brings it to the surface.

This ability to ignore noises and sights, and to apply one's self to other problems or acts, marks the strong mind, the power to be *in* the crowd but not *of* it. This power of concentration is the power of inhibiting extraneous impressions, and it may go to the extent of absent-mindedness. Every one is familiar with stories of mural painters so engrossed in their work that they have fallen from their scaffolding or been rescued only by some timely interference.

On the other hand, when we realize of what unspeakable value a perfect memory would be, we long for some method of tapping this reservoir.

DECENTRATION

It is a somewhat common experience that one is able to recollect some lost fact by a process of deliberate *inattention*. By assuming a passive non-concentration the mind wanders to some of the associated elements of the "moment consciousness" of which the desired item was a part, which is thus reached by direct continuity. This is in striking analogy to retinal perception. In looking for faint stars, one should look a little to one side of where the star is known to be. This brings the retinal image a little to one side of the fovea centralis, and thus aids perception, because such portions are more sensitive to light stimulus. The visual acuity of the fovea, or the power of definition, is immensely superior to peripheral portions. This phenomenon

in both instances might be called *decentration* of attention.

Sidis suggests closing the eyes and putting one's self into a passive state, as a means of discovering the subconscious. This will again be referred to under auto-suggestion.

GENIUS

It is said there is no accounting for genius. The authorship of Shakespeare's plays has been discussed at great length, and while (to use the words of Sir Roger de Coverley) "a great deal might be said on both sides," the principal argument against the Shakespeare claim is that his education, "knowing little Latin and less Greek," was too meager to make it possible. But in his time the ale-house was the resort of those great lights of the Elizabethan Era. There he might easily have absorbed the stories and learned talk of Ben Jonson, Beaumont and Fletcher, and hanging around the theater would have made him familiar with the plays of the time. Indeed the free use of anything he could lay his hands on, the close following of the Holinshed Chronicles in the English historical plays, has caused him to be called a plagiarist.

But poets have been notoriously erratic and unbalanced. The artistic mood seems to be incompatible with that dignified self-control which we so much admire. The scientific thinker has no patience with it. Darwin was great enough to recognize the

incongruity of the two types of mind, and said of himself, that altho quite musical in his youth, he had gradually lost the power to enjoy music. The drunken Bobbie Burns is regarded by many as our greatest English poet. Byron and Poe were certainly not well balanced. It is said that Coleridge's "Ancient Mariner" was the result of an opium dream.

There have been numerous boy calculators whose powers transcend anything attainable by the greatest mathematicians. The writer once heard an "inspirational" speaker rattle off poetry for a quarter of an hour on an impromptu subject. Upon this occasion the writer offered the subject of the "Canal-boat," thinking it not one of which the bards had frequently sung. The production may not have been of a high order, but the meter was good and it was about the canal-boat, the words recurring very frequently. The recitation began almost immediately after the subject was assigned, and lasted over ten minutes.

Now all of these facts, which demand explanation, suggest the possibility that they are manifestations of subliminal consciousness, the outpouring of material unconsciously absorbed. It is admitted that little *proof* is at hand, and that even as a theory it fails to cover all the abnormal manifestations.

There are other psychic phenomena, such as clairvoyance, or the power to see without the eyes, and clairsaudience, or the power to hear beyond the

range of the ears, which seem to be well established. Telepathy, or thought transference, is believed by many whose scientific attainments and recognized standing command respect of their opinions.

It is cheerfully admitted that these manifestations are at present abnormal. Moreover, genius and insanity are closely allied, and it is not always easy to differentiate them. The expediency of cultivating these experiences by present methods is perhaps questionable. That the imagination may take control even with a sound mind is often seen in children who want to play bear. As the play goes on, especially if some fur rugs be used, the auto-suggestion may be accepted with so little discrimination, that the child really becomes terribly scared.

History is replete with mental epidemics, crusades, and financial panics, which are thoroly irrational.

Undoubtedly it is safer to keep the conscious at the helm, to challenge all new impulses. But the problem for the future is to develop some *rational* method of utilizing the vast resources of the sub-conscious. The possibilities are infinite.

CHAPTER III

SUMMARY

Sensation. — Evolution of the special senses. — Doctrine of relativity : noumenon, phenomenon. — Limitations of sense perception. — The threshold. — The greatness and littleness of human intellect. — Special senses, a refinement of tactile sense. — The outward reference of sensation. — The correlation of the senses. — Visual perceptions. — The inverted retinal image, current explanation of erect vision : tactile experience reinverts visual sensation ; incorrect, because not analogous to other special senses. — First sight of congenitally blind is always erect. — Mr. Hanna's experience. — Man ignorant of retinal image. Each mathematical point of object is *referred back* to its proper place, and we *see* not the retinal image, but the object itself in space.

EVOLUTION OF SPECIAL SENSES

SENSATION is the means of communication between an organism and the outside world, — the material universe.

When a nutrient particle comes in contact with the periphery of an ameba, there would be no contractility, no ingestion, were it not for the fact that the cell possesses sensation, of which the various properties of protoplasm are manifestations. The organism would remain unconscious of its environment, — would starve tho surrounded by an ocean of food. The nervous system is avowedly of the

lowest order, but the point to be here noted is that it is sufficient for the needs of its own organization. However meager the knowledge thus obtained may be, it immensely transcends no knowledge at all.

Without attempting to trace the stages from the ameba to man, it may suffice to say that there is evident all along the line an elevation of the function of sensation. This has followed the general law of evolution "from the simple to the relatively complex," that is, sensation has become specialized. Besides common sensation, man has the so-called five senses: touch, taste, smell, hearing, and sight.

DOCTRINE OF RELATIVITY

To most people it has never occurred that this beautiful array of talents leaves anything more to be desired. We think we *know* the material universe because we can touch, taste, smell, hear, and see *some* of it. But what reason have we to presume that these are the only phases of matter?

The deaf mute has no conception of music. To him it is a sealed book. A race of deaf mutes would be sure that they knew the material universe, because they could touch, taste, smell, and see it. Imagine their idea of a piano or a barking dog.

Is it not thus apparent that *we* are probably oblivious to many phases of matter? These five senses are like so many doorways, or windows thru which the ego catches glimpses of the outer world.

Instead of saying that we have in matter some-

thing we really *know*, it may be nearer true to say that we really know more of the attributes of mind, about which we are confessedly ignorant. For example, one may know certain facts about a table, that it is two feet wide and three feet long, that it is harder than his knuckles, but the sum of his knowledge may be so meager, and the special facts so unimportant, when compared with *all* the facts about it, that he may have an entirely erroneous conception.

Perhaps this can be illustrated by this poem by John G. Saxe.

"THE BLIND MEN AND THE ELEPHANT

"A HINDOO FABLE

"It was six men of Indostan,
To learning much inclined,
Who went to see an elephant
(Tho all of them were blind),
That each by observation
Might satisfy his mind.

"The *first* approached the elephant,
And happening to fall
Against his broad and sturdy side,
At once began to bawl :
'God bless me, but the elephant
Is very like a wall.'

"The *second*, feeling of the tusk,
'Cried : 'Ho, what have we here
So very round and smooth and sharp?
To me 'tis mighty clear

This wonder of an elephant
Is very like a spear.'

"The *third* approached the animal,
And happening to take
The squirming trunk within his hands,
Thus boldly up and spake:
'I see,' quoth he, 'the elephant
Is very like a snake.'

"The *fourth* reached out his eager hand
And felt above the knee.
'What most this wondrous beast is like
Is mighty plain,' quoth he;
'Tis clear enough the elephant
Is very like a tree.'

"The *fifth*, who chanced to touch the ear,
Said: 'E'en the blindest man
Can tell what *this* resembles most:
Deny the fact who can?
This marvel of an elephant
Is very like a fan.'

"The *sixth* no sooner had begun
About the beast to grope,
Than seizing on the swinging tail
That fell within his scope,
'I see,' quoth he, 'the elephant
Is very like a rope.'

"And so these men of Indostan
Disputed loud and long
Each in his own opinion
Exceeding stiff and strong,
Tho each was partly in the right
And *all* were in the wrong.

"MORAL

"So oft in theologic wars
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
*And prate about an elephant
Which none of them has seen.*"

NOUMENON AND PHENOMENON

John Fiske expresses this in his "Cosmic Philosophy," thus: "The doctrine of relativity affirms the existence of an unknowable reality of which all *phenomena* whatever are the knowable manifestations." To this unknowable is given the name of *noumenon* or the *real thing*, in distinction from *phenomenon*, which is the increment man knows of the real thing.

The story is told that when a missionary visited some Indians and explained to them the Christian theology, with considerable emphasis on the final state of the unredeemed, the chief showed considerable skepticism. With an arrow he drew a small circle in the sand, then a larger circle enclosing the first. Pointing to the inner circle, he said: "This is what Indian know." Pointing to the outer circle: "This is what white man know." Then sweeping the arrow outside the periphery of the larger circle: "Out here Indian know just as much as white man."

As a further illustration may be mentioned the old story of the doctor who denied the existence of

the soul, because his dissecting knife failed to reveal anything of this nature. He would believe nothing that he could not see. Then the minister asks him if he can see a pain, and if not why he believes in pain. Of course he replies that he *feels* the pain, whereupon the clergyman replies that he knows of spiritual matters by other senses, which are (perhaps) in the doctor undeveloped.

The mental attitude which is undaunted by the restraints of the evidence of the senses is undoubtedly dangerous to the attainment of truth. To claim that one possesses transcendental royal roads to knowledge is intolerable to the scientific mind, yet a recognition of the limitations of our knowledge of the simplest fact must have a salutary effect upon our egotistic tendencies.

This relativity is especially apparent when we consider the special senses. For example, the membrana tympana is made to vibrate in unison with waves of air emanating from some sonorous body, but those waves must reach a velocity of sixteen per second before they are audible to the human ear. We have abundant evidence that the solar spectrum extends far beyond the visible spectrum. The wonderful development of the sense of smell in the dog simply baffles *our* comprehension.

"Thus we learn," as Spencer says in his "First Principles," "the greatness and the littleness of the human intellect — its *power* in dealing with all that comes within the range of experience; its

impotence in dealing with all that transcends experience."

THE TACTILE SENSE

As the more delicate senses have evolved from simple sensitiveness to contact or the touch sense, it may be interesting to note that a simple refinement of this *contact* sense is evident thruout. Taste requires that the article brought in contact with the sense organ shall be soluble. In smell, which is closely allied, the *contact* of finely divided particles of matter is effected by their floating in the air. The matter may be as finely divided as the gaseous state. Hearing requires only the *contact* of air itself in waves, but still contact is here. The hammer-like form of the organ of Corti is very suggestive of this essential element *contact*.

The end organs of the optic nerve are the rods and cones of the retina. The *contact* here is the extreme refinement of touch. The ether wave initiated by the luminous body is condensed by the lenticular system of the eye into an irritant point, the focus, which *touches* the retina. This principle of contact and the fact that the special senses are merely a refinement of the same are of immense advantage in explaining some of our sight perceptions.

The other general principle which should be recognized is *the outward reference of sensation*. The common experience of striking the ulnar nerve at the elbow and feeling the sensation at the tip of

the little finger illustrates a general principle which applies to all the senses.

This outward reference may be made to extend beyond the finger. Tap the floor with a somewhat flexible cane with the eyes closed and we *feel* the contact at the end of the cane.

Perhaps we have all had the unpleasant experience of "seeing stars" from a blow on the eye. This is because an irritation of the optic nerve gives a sensation of light which is referred outward into space. This is also proof of the specialization of the optic nerve. Moreover, the testimony of those from whom it has been necessary to remove the eye without an anesthetic is that, when the optic nerve is divided, not *pain* but a flash of light is the resulting sensation.

This outward reference of the sense of hearing is one means of estimating direction. Notice the involuntary turning of the head so as to put the auricle at right angles to the sound wave. This is in obedience of the general law that all irritations reaching these special senses are referred back to their source.

SIGHT

The refinement of touch and outward reference reaches its highest development in sight.

Primitive eyes and ears bear a strong resemblance to each other. Later the eye has for its prototype the pigment spot. This suggests that sight developed first as an actinic susceptibility, the pigment spot absorbed the heat of the luminous body, and thus be-

came conscious of that which had heretofore been an unknown world.

It is necessary to touch upon the embryology of the eye only for its psychological bearing, that is, the development of sight. Notice then that the sensitive area becomes depressed, then cupped. This shape protects better and also increases the recognition of direction. For greater protection the cavity becomes closed and the cornea and lens develop. For what purpose? Evidently to collect the scattered rays of light and converge them, and focus them in a minute point on the retina. Acute sight demands perfect focusing.

Now let us apply the general law of sense perception and the outward reference of sensation to one of the psychological problems of sight, one which has been very generally misinterpreted.

The Inverted Image. — It is well known that the image on the retina is inverted. How does it happen that we see objects erect? The writer devoted considerable attention to this subject some years ago, ransacking all attainable literature.

Most of the physiologies agree that it is wholly the result of experience, that the child learns by *touch* to reinvert the retinal picture. Foster's explanation is as follows :

“ As a matter of fact the field of vision, in one important particular, does not correspond to the field of external objects. The image is inverted. The rays of light proceeding from an object which *by*

touch we know to be on what we call our right-hand fall on the left-hand side of the retina. If, therefore, the field of vision corresponded to the retinal image the object would be seen on the left hand. We, however, see it on the right hand, because we invariably associate right hand *tactile* localization with left hand visual sensation. That is to say, the field of vision, when *interpreted by touch*, is a reinversion of the retinal image.”¹

Martin, in his work on “The Human Body,” says: “A new-born child, even supposing it could use its muscles perfectly, could not seize a reachable object which it saw. It would not yet have learned that attaining a point exciting that part of the retina above the fovea (center) meant reaching a position in space below the visual axis; but *very soon* it learns that things near its brow, that is, up, excite certain visual sensations, and objects below its eyes, others; and learns to interpret retinal stimuli, so as to localize accurately the directions, with reference of its eyes to outer objects, and never henceforth gets puzzled by retinal inversion.”

These two statements are fairly representative, and altho clear and lucid, are not only inadequate, but erroneous.

First. This reversal by one sense, the tactile, of the testimony of the outer world, as given by another sense, the visual, is not analogous to the other special senses; and during the learning lapses would

¹ Physiology.

occur and pathology would furnish instances of mistakes.

Second. Certain forms of congenital blindness, such as cataracts and complete closure of the pupil, can be remedied by operation. These children learn by touch the correct (erect) position of objects, and their first impression when sight is restored would be an inversion of the object, according to the current theory. As far as the author knows no case of this kind has ever been recorded.

Dr. J. L. Minor, Memphis, Tenn., reported to the writer in November, 1898, two cases of congenital cataracts. The patients were brothers between thirty and forty years of age, and had never seen. After removing the cataracts the doctor kept these men under observation for a month, and assures us "there was never even a suggestion of inverted images."

The case of Rev. Mr. Hanna, reported by Sidis, who after falling from his carriage lost all memory of his former life experience, is a unique bit of evidence. He was as a newly born infant opening his eyes for the first time on the world. So totally obliterated from memory were the experiences of his past life that even the simplest mental processes, like the appreciation of distance, form, size, and magnitude, were effaced from his mind, but objects were seen erect.

Mr. Hanna's subsequent statement is as follows: "The eyes suddenly opened quite involuntarily,

and here indeed was a new world of wonder and study. Objects were all alike as to distance, shape, and thickness, but the variety of color was the feature of interest. The room was a great beautiful picture, absolutely without movement or distance beyond the eye."¹

Furthermore, this is a misconception, based on the old theory of special immediate creation of perfected organisms, and finds no place in the scientific thought of to-day. It is inconsistent with the facts of evolution, which means a regular progression from the simple to the relatively complex; and the explanation of the phenomena of sight must cover the primitive eye, as well as the perfected organ.

The function of the primitive eye must have been limited to simple sensitiveness to light, and the implication of the law of natural selection, that every minute change which was continued was of greater advantage to its possessor than a preceding stage, absolutely excludes the *tactile reinversion* theory. The specialization of a sense organ in such a way that its evidence of the outer world was misleading (inverted) until corrected (reinverted) by some other sense organ (touch), could not have been of more advantage to its possessor than a less highly developed organ which could be trusted; and natural selection would have carefully avoided propagating any such variation.

The inversion is an accomplished fact as soon as

¹ Sidis: Multiple Personality.

the primitive eye is able to locate an external point in space, for it can never see the point till it can tell its direction.

The subsequent changes are all along this line of so perfecting the mechanism that a luminous point in space shall produce an irritant point on the retina. Thus there is no break in the contemporaneous development of the *organ* of seeing and the psychical *act* of seeing. They advance with equal step. There is no catastrophe; no period when the optical apparatus gives wrong impressions to the sensory.

It is indeed strange that ophthalmologists have so universally neglected to elucidate this puzzling phenomenon, and in what follows the author is borrowing from Le Conte,¹ whose explanation is the only satisfactory one which has come to his notice.

A cone of light emitted by a radiant point falling on a convex refracting surface is again converged to a point behind the refracting surface. These two points are called conjugate foci (literally yoked together), because if the radiant be placed at either focus the light will be brought to a point at the other focus. (Fig. 1.)



FIG. 1.—CONJUGATE FOCI.

In the normal eye, at rest, a luminous point twenty feet or more distant is focused as a point on the

¹ Sight, 1880.

retina. (Fig. 2.) If the luminous point be nearer than twenty feet, the refracting or bending effect of the eye must be increased (accommodated) so that

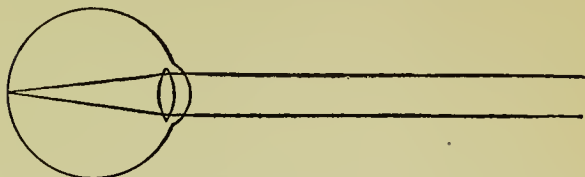


FIG. 2.—NORMAL EYE AT REST, FOCUSED FOR DISTANCE.

the conjugate focus shall still be at the retina. (Fig. 3.) This is accomplished by increasing the thickness of the crystalline lens, shown by the dotted line, Fig.

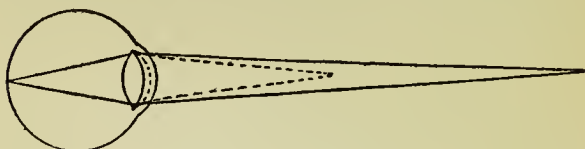


FIG. 3.—ACCOMMODATION FOR NEAR VISION BY INCREASED THICKENING OF THE LENS.

3. As before stated, when the eye is able to reproduce a luminous point in space as an irritant point on the retina, the optical requirements for perfect vision are secured.

Now "outward projection" means that the retina is touched at this mathematical point, and, like all other senses, it refers the sensation back to the source; in this case along the central line of the pencil of rays.

The size of the image on the retina of the largest object that can be seen at all clearly at one time with-

out moving the eye or the object is probably not greater than three millimeters.

Conversely, the field of vision — of clear vision — with an immovable eye is extremely limited. At the length of the arm a circle the size of the thumb-nail represents all that can be seen clearly, and it is only by rapid excursions that the eye sees in detail those portions that were only outlined before.¹ The field of vision has been compared to a painting which is hazy and indistinct except a circle one-half inch in diameter, in which the most minute details are worked out. This small area may be any portion of the picture which is desired, by turning the eye toward that spot, but no two places at once. It is hard to believe this, for the eye, by rapid excursions, so quickly covers a large field that the separate sensations are fused into one.

Now, the analogy and bearing of this is important when it is understood that we do not see even this one-half inch object as a whole. Each mathematical point of which the object is composed sends out its bundle of rays, which are again converged to a point upon the retina, and from this irritation conveyed to

¹ According to Suter: "Refraction and Motility of the Eye," page 142. "The fovea centralis, upon which falls the image of every object attracting mental attention, does not exceed 0.4 mm. in diameter." Taking the distance of the nodal point in front of the retina to be 15 mm. (Dennett), by a very simple problem of similar triangles, it is demonstrable that, at a distance of one-half meter, an object to be discerned with normal acuity cannot exceed 13.5+ mm. in diameter.

the brain sensation (sight) results, which refers the irritant right back along the ray-line of each pencil to its source. So point after point irritates the retina, and is referred to its appropriate place in space until the luminous object is reproduced in the external world by the outward projection of an infinite number of luminous points.

To make this clear, a very simple object should be used; let it be a vertical line. (Fig. 4.) Now a lumi-

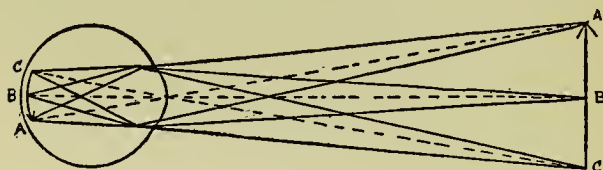


FIG. 4.—THE OUTWARD PROJECTION OF THE RETINAL IMAGE.

nous point at the top of this line produces an irritant point at the lower side of the retina, which is referred back to its source above and seen there in space.

A luminous point at the bottom of this line produces an irritant point on the upper side of the retina, and is referred back to its position in space, which is below. A point from the center is referred back to its place in the centre for the same reason. And so with a point midway from the center to the top, and a point midway from the center to the bottom; and the process goes on simultaneously for each point of which the line is composed, and a sort of mental composite results, which is the exact counterpart of the object, occupying the identical position in space;

somewhat as a spiritual body is conceived to be immanent in the natural body.

The solid lines represent the pencils of rays, the broken lines the axial rays of each pencil, showing the direction of the outward reference of the three irritant points illustrated.

To recapitulate: By the law of conjugate foci, a luminous point in space corresponds to an irritant point on the retina. By the law of outward projection it is referred to its proper place in the object, and, as the object is not seen as a whole, an infinite number of such luminous points of which the object is composed are referred to their respective positions, and furnish a synthetic conception, which must be erect because each of its constituent points is in its place.

Since Newton, scientists have recognized that for one body to act upon another at a distance, some medium must intervene. So with sight, the provisional ether is that intermediate something which reaches from the luminous point and "touches" the retina. The unlimited extent of the ether gives to sight *unlimited* range, and, altho light travels 186,000 miles per second, it takes three and a half years for light to reach us from the nearest star.

Professor Dolbear says: "The light which reaches us to-day from some of the more distant stars left them before America was discovered; before Jesus was born; before the pyramids were built,

and, for all we should be able to see, they may have ceased to exist long ago, tho their light still shines.”¹

While this work was in press there appeared in *Current Literature*, September, 1906, an article entitled “A New Theory of Vision.” This was a quotation from *Cosmos*, Paris, of the work of Mr. George Poullaine, who claimed to have discovered “a loop or twist in the optic nerve.” The twist is in the protuberance of the outer and posterior parts of the optical layer of the brain. “The peculiar conformation explains,” says *Cosmos*, “the reinversion of the retinal image.

“The optic nerves, after emerging from the eyeballs, converge to the optic chiasma. Here they partly cross, or seem to exchange part of their fibers. The two nerve bundles thus modified separate and pass around the peduncles. In this part of their course they are known as the optical bands or Gasset’s hemopic nerves.

“These bands enter the brain. Their fibers can be traced in the pulvinar, where they describe concentric curves. They can be traced also in other portions of the optical layer, where they are known as Gratiolet’s optic rays.

“In order to more correctly ascertain the paths of the fibers, Poullaine studied and measured sections of the loop made by a horizontal plane and by two vertical planes, anterior, posterior, and transverse.

¹ Matter, Ether, and Motion.

. . . The theory," according to *Cosmos*, "makes it easy to understand the mechanism of the reinversion of the retinal image. The double curve effects a complete reversal of the order of the nerve fibers both from top to bottom and from right to left, the two half-turns being exactly equivalent to a half-twist or rotation thru 180 degrees about the axis of the bundle."

Individual anatomical variations of all parts of the human body are frequently discovered by surgeons. The location and number of the branches of the arteries, veins, and nerves are not the same in different individuals. Is it reasonable to presume that the optic nerves are an exception to this rule? If not, then there are many people whose optic nerves do not twist the exact 180 degrees required.

If erect vision depends upon this condition, it is evident that a faulty or anomalous development would furnish instances of partial or complete inverted vision. Very many cases of this kind are needed to substantiate this very ingenious theory, and none are given. Moreover, the theory is based on the misconception that we *see* the *image*, not on the retina, as the tactile reinversion theory presumes, but at some other portion of the cranium. In a very recent work Doctor Souter says: "It is apparent that the retinal image is always inverted with respect to the object of vision. The mind, however, takes no cognizance of this inversion, since it possesses the *power of exter-*

nal projection so that we see *not the image* but the object in its true position.”¹

Then the writer proceeds to repeat the old argument of tactile reinversion as follows: “This power has doubtless been derived thru association with the sense of touch. We have learned that a stimulus conveyed to the brain from the upper part of the retina proceeds from an object situated below the eye, and *vice versa*, and that a stimulus on the temporal side of the retina must proceed from an object on the nasal side of the eye, and *vice versa*.”

¹ The Eye and Nervous System. Posey and Spiller. *Lippincott*, April, 1906, p. 35.

CHAPTER IV

SUMMARY

The blind spots ; the two optic discs. — Retinal shadows : erect, because cast by objects too near the eye to form image on retina ; outward projection of, produces inverted image. — Outward reference of tactile sense ; flexible cane. — Monocular estimation of distance. — Difficult without parallax. — Law of corresponding points. — Each ganglion cell two neurons, divide for both retinæ. — Orientation, with prism. — Diplopia : — physiological at distances farther or nearer than point fixed. — Analogy of digital tactile sense. — Binocular estimation of distance. — Fusing successive double images. — Coördination of convergence and accommodation. — Stereoscopic perspective. — Pictures correspond to right and left retinal images. — Convergence required to fuse, determines distance ; convergence excessive, nearness ; convergence slight, distance. — May overcome mathematical perspective. — Binocular vision an acquired faculty. — Fusion training. — The amblyoscope. — Phoro-optometer stereoscope. — Controlled reading.

THE BLIND SPOTS

EACH optic disc, which is the head of the nerve, is a blind spot, but the fact escapes our attention because ordinarily the image cannot fall on both at the same time, so that one or the other eye can always see every point in the binocular field. Indeed, if only one eye be used, the blind spot is so small and eccentric that it is never noticed.

To demonstrate in right eye. (Fig. 5.)

Close left, hold paper so that 2 is directly in front

of and on level with the right, about eight inches away. Fix the sight on 1 and bring the paper slowly

1 •

+ 3

2 •

FIG. 5. — DIAGRAM TO DEMONSTRATE THE BLIND SPOT.

toward face. At about five inches distant 3 disappears, reappearing again at about four inches. The figure may be reversed for left eye.

RETINAL SHADOWS

Objects too near the eye to be focused on retina cast shadows which are erect, but the outward reference of a direct shadow gives an inverted image in space.

Demonstration (Fig. 6). — Hold pin, head up, so close to eye that it touches the lashes. A visiting-

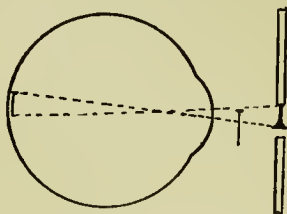


FIG. 6. — THE INVERTED RETINAL SHADOW.

card with pinhole perforation is now brought up with hole in line with head of pin. The object is seen in space beyond the card, that is, the shadow is referred to the place which an object would occupy

normally to produce such an image on the retina. This is indicated in figure by broken lines.

Outward reference of tactile sense may be made to extend beyond the finger.

Demonstration. — With a flexible rattan cane one should feel his way about the room blindfolded. The sense of feeling the point of contact between cane and wall or floor is very vivid. In the same way the surgeon *feels* with the point of probe or knife.

Estimation of distance depends upon the refinement of muscle sense. It is both monocular and binocular. That this is not a congenital faculty is illustrated by the child reaching for the moon.

When Doctor Sidis' patient, Mr. Hanna previously referred to, first opened his eyes, "a great *flat* pic-

ture was before him." Objects were seen in their proper *direction*, but he could not distinguish between far and near.

To illustrate our dependence on parallax, with one eye closed, attempt to bring the finger down on the point of a pencil *held by another*. If this is held against a side wall the parallax makes the estimation easy.

Let A (Fig. 7) be the pencil. We learn by expe-

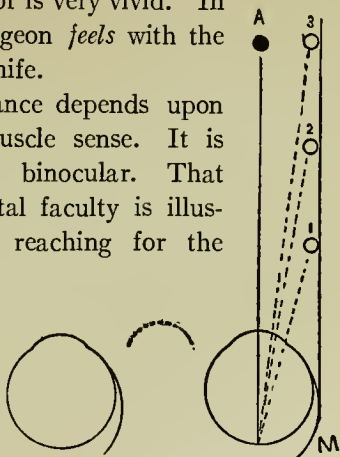


FIG. 7. — MONOCULAR ESTIMATION OF DISTANCE BY PARALLAX.

rience just how much contraction of the muscle M is required to turn the eye so as to "fix" 1, 2, and 3, respectively, and so determine distance by this muscle sense.

A good method of eliminating parallax is to look at a coin on a table with the eye a little below the level of the table, so that the *edge* of table and coin are visible, but not the *top* of table. (Fig. 8.) As before, the other eye must be closed and the coin

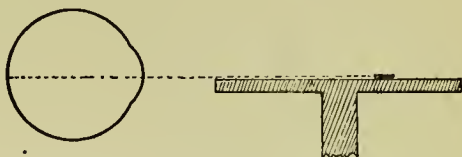


FIG. 8. — DIAGRAM TO ILLUSTRATE DIFFICULTY OF ESTIMATING DISTANCE WITHOUT PARALLAX.

must be placed by another person *after* the eye has taken the correct position. Several trials will be necessary to bring the finger down on the coin.

Binocular *single* vision depends upon the law that images falling on identical portions of the two retinae cause the sensation of *one* object.

This is because each ganglion cell has two neurons which run together in the optic tracts, but part company at the chiasm, one going to the outer half of the retina of the same side and the other crossing over to the inner half of the retina of the other eye. (Fig. 9.)

Pathology furnishes additional proof of this, in cases of hemianopsia or one-sided blindness. Here

a lesion of the right optic tract will cause loss of the left field of both eyes.

Orientation. — If a prism of six diopters be held

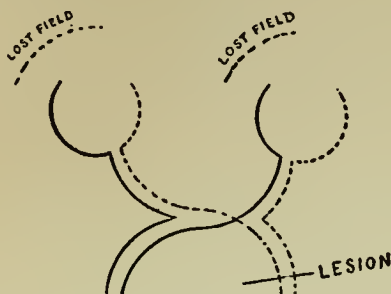


FIG. 9. — THE PARTIAL CROSSING OF THE FIBERS OF THE OPTIC NERVES.

base down before one eye, diplopia results, because the prism deflects the light from the object to some other than the *corresponding* point.

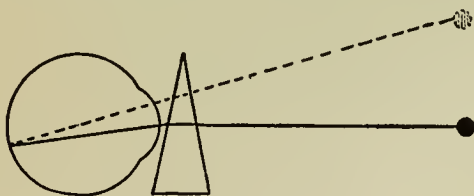


FIG. 10. — FALSE ORIENTATION PRODUCED BY PRISM.

The image will fall on the lower part of the retina, and the object will be referred to a point above, which would normally excite that portion of the retina. This is called false orientation, and is exactly what happens when the inferior rectus is paralyzed, and

the resulting diplopia produces false orientation. The patient has a false idea of his own position in space with relation to other objects.

It is difficult to realize that objects farther or nearer than the objects looked at are always seen double. For example, if the eyes fix a point (A, Fig. 11) the images A' A' fall on corresponding points

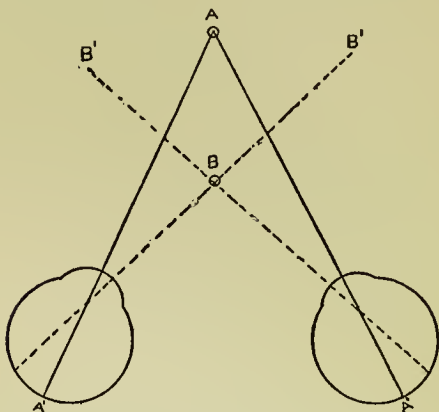


FIG. 11.—PHYSIOLOGICAL DIPLOPIA OF OBJECTS FARTHER OR NEARER THAN THE POINT FIXED.

which are end organs corresponding to a *pair* of neurons, therefore a single impression is the result.

Light from B falls upon end organs belonging to neurons *not* pairs *from the same* ganglion cell. In fact, in this illustration they may belong to opposite tracts. The result is two images of B, B'B'.

Demonstration. — Most people find it difficult to see the double images of a single object like a pencil.

Look at some object on the opposite side of the room, and bring up the two index fingers into the line of vision. Keep the eyes focused on the wall, but notice the fingers. Separate the fingers slightly and a double-ended finger will appear between the other two. This is the composite of the extra image seen by each eye.

Touch perception may be doubled in a similar way. Cross the second finger over the index finger, and then feel of *one* marble held in another person's hand. A sensation is felt on the side of each finger which normally would necessitate *two* marbles, and the doubling sensation is very vivid.

The estimation of distance with the two eyes is very much more exact than with one. To avoid diplopia we converge the eyes till the retinal images fall on corresponding points. The nearer the object the greater must be the convergence.

By muscle sense we associate far and near with relatively slight or great convergence.

This arrangement is quite similar to a problem in surveying, where we have given two angles and included side to solve the triangle.

Let A B (Fig. 12), the pupillary distance = the base line. Angles A and B = amounts the muscles (M M) must converge the eyes, in order to see C as a single object.

If the object has three dimensions, each eye sees a different picture.

Stereoscopic pictures are right and left like the

retinal images, and when artificially combined by the proper arrangement of lenses and prisms reproduce for us the perception of distance in a landscape

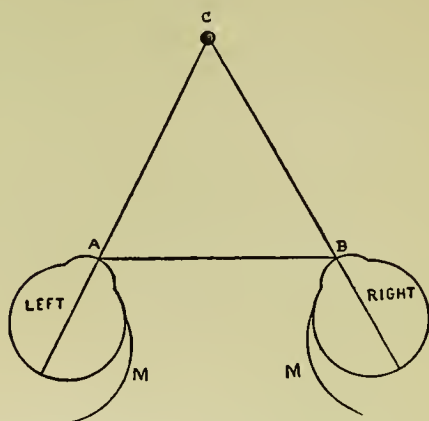


FIG. 12.—THE BINOCULAR ESTIMATION OF DISTANCE.

with great vividness. After some practise one can manipulate his eyes so as to combine these pictures without a stereoscope. It requires *dissociation* of accommodation and convergence, and as the normal relation of these two functions is *association*, it is much better to use the stereoscope than to cultivate this habit.

In this figure (Fig. 13) the smaller circles are decentered toward each other, so in order to fuse these two into one, the eyes must be more strongly converged than is necessary to fuse the larger circles. The sensation is therefore a conic section with the smaller end toward the observer.

Decenter the small circles the other way (Fig. 14) and we reverse the position of the cone.

It has been shown by Worth,¹ of London, that

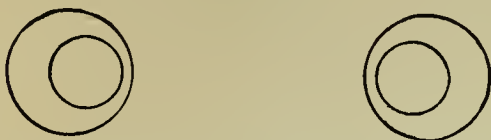


FIG. 13. — DIAGRAM TO DEMONSTRATE BINOCULAR PERSPECTIVE; THE SMALLER END SHOULD APPEAR TO BE TOWARD THE OBSERVER.

the movements of the two eyes are largely controlled by a fusion sense, and that a faulty development of this faculty is frequently the cause of cross eyes. If taken early many of these cases can be cured without operation by developing the fusion faculty.

For this purpose he has devised an instrument called the amblyoscope, with which even a cross-

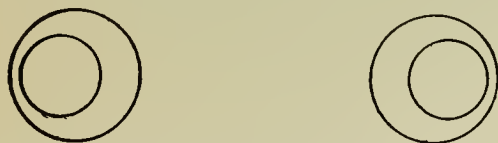


FIG. 14. — DIAGRAM TO DEMONSTRATE BINOCULAR PERSPECTIVE; THE LARGER END SHOULD APPEAR TO BE TOWARD THE OBSERVER.

eyed person can fuse simple images. This he cannot do with the ordinary stereoscope.

This instrument does not allow of one's watching the eyes while they are being exercised. In order

¹ Squint: Its Causes, Pathology, and Treatment.

to observe the motions of the eyes and make it possible to measure exactly the deviation during binocular vision, the author has devised a stereoscopic attachment to a well-known instrument called the phoro-optometer. With this instrument the strength of the prisms may be varied to suit the individual case.

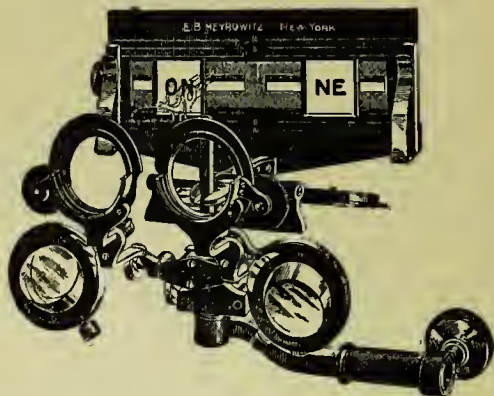


FIG. 15.—AUTHOR'S STEREOSCOPIC ATTACHMENT TO THE PHORO-OPTOMETER.

In order to ensure the use of both eyes for one's reading, writing, etc., and other near work, the author has contrived a control device which consists of a band of blackened aluminum, held by a head-band midway between the eyes and the printed page. The fields seen by the two eyes overlap, and if binocular vision exists one experiences no difficulty in reading *thru* the obstruction, but if either eye is



FIG 16. — AUTHOR'S DEVICE FOR CONTROLLED READING.

This aluminum band is half an inch wide and is adjustable by ball and socket joint. The band about the head is black silk.

suppressed the band obscures some of the letters in each line.

Without entering into a discussion of the peculiar mental condition which causes a cross-eyed person to suppress the image seen by the squinting eye, the fact is here mentioned as an illustration of the intimate relation between psychology and medicine.

Le Conte says: "As a means of scientific culture the study of vision seems to me almost exceptional. It makes use of and thus connects the sciences of physics, physiology, and even psychology. It makes the cultivation of the habit of observation and experiment possible to all; for the greatest variety of experiments may be made without expensive apparatus, or indeed apparatus of any kind. And, above all, it compels one to analyze the complex phenomena of sense in his own person, and is thus a truly admirable preparation for the more difficult task of analysis of those still higher and more complex phenomena which are embraced in the science of psychology."¹

¹ Sight, p. 4.

CHAPTER V

SUMMARY

Hypnotism. — Historical. — Neuro - hypnotism. — Nerve sleep, so called by Braid, 1843. — Phenomena are as old as civilization. — Early religions show many instances. — Evident in religious fanaticism of to-day. — Mesmer. — "De Planetarium Influxa," 1776. — The action and virtue of animal magnetism. — The Paris establishment; mystery. — Investigation by Academy of Sciences: "Not worthy of further scientific investigation." — Second investigation of mesmerism. — Eliotson, 1837, University Hosp., London. — Resignation and publication of journal. — Esdaile, 1845, India. — Painless surgery. — Braid, 1843, "Neurypnology." — Rechristened "Hypnotism." — Result of subjective causes. — Liébeault, 1864, Nancy, so-called "school." — Charcot, 1878, Salpêtrière school. — Society for Psychic Research, 1882, International. — Bramwell, England, best living exponent. — Quackenboss, New York, moral reformation. — Morton Prince, Boston, multiple personalities. — Petersen, Boston, translator of Wetterstrand. — Sidis, Brookline, "Psychology of Suggestion," "Psycho-pathological Researches," "Multiple Personality." — Methods of hypnotizing. — Physical means not essential but useful. — Patient should be told what to expect. — Narcotics and anesthetics. — Susceptibility, almost universal. — Well-balanced individuals best subjects. — Hysterical and weak-willed difficult. — Hypnotism a *physiological* function.

HYPNOTISM — HISTORICAL

HYPNOTISM is a contraction of the term neurohypnotism (nerve sleep), coined by Dr. James

Braid, of Manchester, Eng., 1843, to cover certain psychic *phenomena*, which under varied forms and names are as old as civilization. The well-known power of the snake to "charm" the bird while he approaches his prey, would suggest that it even antedates the evolution of man.

The early history of all religions is to such an extent a record of trances, ecstasies, and visions of their votaries that we must believe that these now comparatively unusual manifestations were, in the childhood of the race, of rather common occurrence. The priests of all ancient peoples have exercised these arts, and no doubt owed their unlimited power over the common herd to their knowledge of this mysterious force. This was not limited to any one nation, as it was practised by the Chaldeans, Babylonians, Persians, and Egyptians.

Aristides, a Grecian who lived about 120 A. D., has left a description of a disordered mental state, which possessed him for thirteen years, which was probably a form of auto-hypnosis. The lives of Christian saints furnish many instances.

Even to-day the power to "throw a fit" is in some communities regarded as a manifestation of divine approval. Besides the religious element there was in all this a therapeutic power; wonderful cures were effected in and by the person thus talented.

The first important effort at therapeutics without theology was the appearance of Mesmer. He was

a German physician, and in 1766 published a book entitled "*De Planetarium Influxa*," giving an account of his discoveries in animal magnetism. This, to use his own words, is "a fluid universally diffused, the medium of mutual influence between the heavenly bodies. There are observed, particularly in the human body, properties similar to those of a magnet. . . . The action and virtues of animal magnetism may be communicated from one body to another. Animal magnetism is capable of healing diseases of the nerves *immediately* and others *mediately*. It perfects the action of medicines. In animal magnetism nature presents a universal method of healing and preserving mankind."¹

Mesmer was at this time thirty-three years old and had studied medicine under the best men at Vienna. His belief in astrology was not then inconsistent with a man of parts. He treated the sick by stroking them with magnets, evidently supposing that in this way he transferred some of the "magnetism" of the heavenly body to the human body.

By this means the patient became cataleptic or hysterical, or fainted, probably depending on his idiosyncrasy. Whichever state was manifested, curative results followed. In 1776 he met in Switzerland a priest named Gassner, who effected cures by manipulations (laying on of hands) without the use of magnets. So like a true scientist, Mesmer discarded the magnets.

¹ *Encyclopedia Britannica*. J. G. M.

Two years later he opened an establishment in Paris for treating patients, and achieved such great success as to arouse the envy of the medical fraternity. They regarded him as a charlatan, and his method of conducting his séances would seem to us to-day to justify the charge.

“Appreciating the effects of mysterious surrounding on the imagination of his patient, he had his consulting-rooms dimly lighted and hung with mirrors; strains of soft music occasionally broke the profound silence; odors were wafted through the room; and the patients sat around a kind of vat in which various chemical ingredients were concocted or simmered over a fire. Holding each other’s hands or joined by cords, the patients sat in expectancy, and then Mesmer, clothed as a magician, glided amongst them, affecting this one by a touch, another by a look, and making passes with his hands toward a third. The effects were various, but all were held to be salutary.”¹

Notwithstanding all this “machinery,” we may, I think, believe in his honesty of purpose, for, at his own request, the Academy of Sciences appointed a committee to investigate his claims. Benjamin Franklin was a member of this committee, which reported that the *cures were genuine*, but that the effects were due to the imagination of the patient, and that the subject was *not worthy of further scientific investigation*.

¹ Encyclopedia Britannica. J. G. M.

We are amused to-day at the dictum of these men that a system of therapeutics which they admitted made genuine cures *was not worthy of further scientific investigation.*

Let us take heed that we fall not into a similar blunder concerning some of "irregular" mental cures of our own times. The physician has no right to neglect any *ism* or *pathy* that he admits is curative.

Whether from this adverse report or from increasing extravagance of mysticism, mesmerism, as it was then called, fell into disrepute, and Mesmer went to Switzerland, where he died 1815. One of his disciples who remained in Paris attempted to divest it of the marvelous, but met with little practical success, and it was not until ten years after Mesmer's death that it came again into prominence, and another investigation followed by the Academy of Sciences.

After six years' labor, the committee reported confirming the therapeutic value, but a majority of the Academicians wanted an *adverse* report, and another committee was appointed properly "instructed." Two subjects were examined and no results obtained.

This negative result *satisfied* the majority of the scientific men that the positive results of the earlier committee were untrue, and it became more unpopular than ever to be known as interested in this subject. The very name mesmerism was an offence to medicine.

But the influence of Mesmer was far-reaching. In 1837 in England appeared a doughty champion in the person of Dr. John Eliotson, professor of practise of medicine, University College, London. His demonstrations in the hospital wards became very popular with the students, but the dean advised him to desist. This he refused to do, and a year later the council of the university passed a resolution forbidding the "practise of mesmerism or animal magnetism." This naturally caused his resignation. But Eliotson's influence was made greater than ever by the publication of a journal "for the collection and diffusion of information connected with cerebral physiology and mesmerism." This appeared as a quarterly for twelve years. The contributions were from Eliotson and others, and reports of their work were thus put on record.

Anesthesia was the one phase now emphasized, and thus surgery, even capital operations, was rendered painless. This was before the discovery of chloroform and ether, and when we remember the description of surgical operations without anesthetics, it would seem as if the demonstrated possibilities of mesmerism would have been hailed with delight by the profession. Bitter editorials appeared in the *Lancet*, claiming that the subjects who said they felt no pain were impostors or persons naturally insensible to pain. Eliotson was a man of advanced ideas in many other directions, especially in the use of the stethoscope and posology.

Dr. James Esdaile, an English surgeon in the Indian service, having read Eliotson's journal, in 1845 mesmerized a patient before operating for hydrocele, and as the operation was entirely painless he adopted it as a routine measure, doing over one hundred painless operations during the year.

A committee of investigation, appointed by the governor, made such a favorable report that Esdaile was put in charge of a small hospital in Calcutta for further experiment and demonstration. Here his work was equally successful, but the medical profession of India denounced him as "an honest fool deluded by his patients," and the medical journals refused to publish any account of his wonderful record.

About this same time, 1843, in England, James Braid, of Manchester, published "*Neurypnology*," in which he announced the *subjective* nature of the phenomena, introducing the term hypnotism. Probably nothing but the new name gained him a hearing. The scientific method was coming into vogue, and Braid applied it here. He discovered that the state could be induced by fixed gaze, and contended that animal magnetism had nothing to do with it.

He believed it the result of physical causes. His belief in phrenology led him to think that pressure on certain portions of the skull would produce special phenomena. His advocacy of the *physical* cause reinstated the subject as "worthy of further scientific investigation."

The ultramaterialists of the day felt that since it had a *material* cause, there was nothing degrading to their intellects in giving it some consideration.

It must be borne in mind that, at the time, the tremendous power of suggestion had not been recognized. Later in life Braid modified this idea of a *physical* cause, announcing very clearly his belief in mental concentration or monoideism as the all-important factor, altho he still held that the monoideism “depended on a definite physical change in the subject.”

But it must not be supposed that Braid escaped professional persecution and ostracism. He said: “Like the originators of all new views, however, hypnotism has subjected me to much contention; for the skeptics, from not perceiving the difference between my method and that of the mesmerists, and the limited extent of my own pretensions, were equally hostile to hypnotism as they had been to mesmerism; and the mesmerists, thinking their craft was in danger, — that their mystic idol was threatened to be shorn of some of its glory by the advent of a new rival, — buckled on their armor, and soon proved that the *odium mesmericum* was as inveterate as the *odium theologicum*.”¹

Braid wrote extensively and practised special surgery. Some idea of the extent of his work may be gained from the statement that two years before his “Neurypnology” appeared he had operated on

¹ Bramwell : Hypnotism.

262 cases of clubfoot, and seven hundred cases of strabismus.

After Braid's death little attention was paid to the subject for twenty years, but this period saw the rise of the Nancy school, which has been the inspiration of most of the later interest in the subject.

"Good Father Liébeault," as he was fondly called by his patients, settled in Nancy in 1864, and soon built up a large free clinic, giving up all remunerative practise. He had been interested in mesmerism for three or four years. Without knowing of Braid's work he independently discovered the subjective nature of hypnotism. He discarded all medicines and worked along quietly, dealing out therapeutic suggestion with a liberal hand.

In 1882 he cured a case of sciatica which Bernheim had treated in vain with drugs for six months. This converted Bernheim, who became a zealous pupil, and a few years later published "Suggestive Therapeutics."

Altho the Nancy hypnotists disclaim the term "school," as their individual opinions are quite at variance, yet there is among them a consensus of opinion which is opposed to the claims of the Salpêtrière school, which was so called from certain dogmatic statements of Charcot, which will be considered later when dealing with "Theories."

Altho Braid was translated into German in 1881 by Preyer, yet in England little was heard of the subject till the formation in 1882 of the Society for

Psychic Research. This society numbers among its members many of the most eminent scientific men, both in this country and in Europe. The reports of hypnotic investigations have appeared from time to time in its "Proceedings." Among these none has been as clear-cut and convincing as the contributions of Bramwell, who has given us the results of his labors in his recent treatise, to which I am indebted for many of the facts of this brief history.

Besides the public exhibitions, little has been done in this country in the legitimate practise of hypnotism. Doctor Quackenboss, of New York, has written, lectured, and practised.

His practise has been largely in the line of moral reform, and he is accomplishing a noble work. He will be referred to again under "Methods of Induction."

In our own city (Boston) some of the names one frequently hears mentioned as interested in this subject are Dr. Morton Prince, professor of diseases of the nervous system, Tufts College Medical School; Dr. Boris Sidis, formerly director of the New York Pathological Institute; Dr. Henrik G. Petersen, the translator of Wetterstrand; Prof. Hugo Munsterberg, of Harvard University, and Dr. James J. Putnam, of Harvard Medical School.

Doctor Prince has written quite extensively for the Psychic Research Society and medical journals. His "Dissociation of a Personality" is a most exhaustive

study of what he believes are several different personalities occupying one body.

Doctor Sidis' most important contributions to the subject are the following books: "Psychology of Suggestion," "Psycho-pathology," "Multiple Personality."

METHODS

The methods of inducing hypnosis have been as varied as the theories concerning it.

It has gradually developed that magnets, relics, and paraphernalia are superfluous. Even fixed gaze is not essential, as Braid discovered by successfully hypnotizing a blind patient. Physical methods are entirely unnecessary, and possess no virtue in themselves, but are a powerful means of making indirect suggestions. The patient comes to the hypnotizer with an unknown quantity of preconceived ideas, among which are sure to be the efficacy of passes and fixed gaze, so that all operators have found it expedient to use physical methods in conjunction with verbal suggestions. It is always advisable to begin with some explanation of what is expected. The patient should be assured that the sensation will be agreeable and that success will be in proportion to his ability to coöperate.

The eyes may be closed and the idea of sleep suggested. This idea is more readily accepted if the patient be put in a comfortable position with the head resting. The patient should be told to think only of sleep, and this idea should be repeated suf-

ficiently often to secure his attention. He should be told to breathe regularly and deeply, and that his lids are getting heavy and that he is drowsy. Gradually the strength of the suggestion should be increased till the lids cannot be opened.

The patient is still conscious of all that is transpiring, but his lids are firmly closed. Catalepsy in the most awkward positions is now easily secured, by stroking the part and suggesting increasing stiffness. Anesthesia is also easily produced. In fact, all that follows is as the operator directs, provided that the subject be sufficiently suggestible.

The superficial stages are easily obtained with the majority of people, but trance and somnambulism are obtainable only with a few.

Before hypnotizing it is well to suggest that it will be a pleasant experience, and as soon as one gets control of the eyes, to say with decision: "No one shall ever be able to hypnotize you against your wishes, or except for your good, or no one but your physician," and before waking, suggest that an agreeable feeling will be experienced like waking from a refreshing sleep.

Fixed gaze on some bright object like a coin held above the eyes is also a very common method. This serves to fatigue the muscles that raise the eyes and hastens the result. The subject should not be awakened suddenly, but told that he will awake after you have counted ten. This is more like the normal waking from sleep. The operator should conduct

himself in a perfectly natural, matter-of-fact manner. While an ignorant subject may be sometimes overawed by Svengali attitudes, your intelligent patient will be disgusted, and you will forfeit his respect and confidence. Public hypnotists often assume these airs of his Satanic majesty. Perhaps this is not so much to impress the patient as a play to the gallery.

One should not feel nor exhibit any discouragement if the first attempt be unsuccessful. Infinite patience may be required, as success may crown one's efforts after fifty failures. In obstinate cases it may be necessary to resort to mild anesthesia. Some operators administer a hypnotic drug to induce drowsiness. Doctor Quackenboss informs me that he invariably commences with a dose of paraldehyde. There is no way of determining susceptibility except the initial effort.

SUSCEPTIBILITY

The late Doctor Charcot claimed that hypnosis is a *morbid* condition, which can be induced only in the hysterical. The insufficiency of the data upon which this statement rests must be apparent from the admission that "only a dozen cases of true hypnosis have occurred in Salpêtrière in ten years, and that a very large proportion of the experiments were conducted on one subject, who had long been an inmate of that hospital."

The fact is just the reverse: hysterical subjects are very difficult to hypnotize. Hypnosis is a *physio-*

logical function. “Some years ago Bernheim had already attempted to hypnotize ten thousand hospital patients with over ninety per cent. of successes, while Wetterstrand recently reported 6,500 cases with 105 failures. International statistics published in 1892 gave 8,500 cases, from fifteen observers in different countries, with *six per cent. of failures*.

“Mr. Wingfield, demonstrator of physiology at Cambridge, Eng., attempted to hypnotize 170 individuals, all but eighteen being undergraduates. In eighty per cent. hypnosis was induced at the *first attempt*, but as no second trial was made with the unsuccessful cases, these results undoubtedly *understate* the susceptibility. Liébeault found soldiers and sailors particularly easy to influence.

“Grossman, of Berlin, recently asserted that the hard-headed North Germans were almost universally susceptible. Bramwell, of England, observed that healthy Yorkshire farm laborers made remarkably good subjects.

“Professor Forel hypnotized nearly all his asylum warders. He states that he himself selected these men for this important position, and that he did not choose them from the ranks of the hysterical. Forel claims that every mentally healthy man is naturally hypnotizable.”¹

Moll says: “If we take a pathological condition of the organism as necessary to hypnosis, we shall be obliged to conclude that nearly everybody is not

¹ Bramwell : Hypnotism.

quite right in his head. The mentally unsound, particularly idiots, are much more difficult to hypnotize than the healthy. Intelligent people and those with strong wills are more easily hypnotizable than the dull, the stupid, or the weak-willed.”¹

¹ Bramwell : Hypnotism.

CHAPTER VI

SUMMARY

Hypnosis. — Phenomena. — Classification, difficult and somewhat arbitrary. — Mild, catalepsy, conclusive evidence of hypnosis. — Deep, somnambulism, hallucinations accepted. — Catalepsy unwise to exceed at first attempt; sufficient for slight analgesia; sufficient for therapeutic suggestions. — Anesthesia not practicable for general surgery, because not absolute in more than ten per cent. — Character and frequency of pulse may be controlled. — Suggestibility increased, raise of threshold. — Amnesia the rule, but subject to suggestion. — The alert stage, seemingly inconsistent with sleep. — Hallucinations: positive, negative; *en rapport* with operator, but others may be introduced. — Subject reasons deductively, but not inductively. — Post-hypnotic suggestions; appreciation of time. — Automatism, not absolute, subject may refuse harmless suggestion. — Criminal suggestions, popular literature responsible for belief in; mistaken deductions from paper dagger experiment. — Refinement of moral sense. — The higher self: avoid being deceived. — Precautions in conducting experiments: avoid self-deception.

THE hypnotic state varies in intensity in different individuals, or in the same individual at different times, from a slight drowsiness to almost complete coma. Many attempts have been made to classify these stages by the phenomena exhibited, but it should be understood that these are but arbitrary divisions.

Drowsiness, being almost wholly a subjective symp-

tom, can hardly be considered hypnosis. Until catalepsy is produced the patient is not hypnotized. Inability to open the eyes is a catalepsy of the orbicularis muscle. After this, rigidity of legs or arms in awkward positions follows the suggestion of the operator. The patient may be perfectly conscious, indeed may really be amused at his helplessness. While many other phases may now appear, yet for purposes of definition, the cataleptic stage signifies a certain well-recognized condition.

With certain restrictions, which will be fully considered later when speaking of automatism, the succeeding manifestations appear as suggested. Somnambulism has come by general consent to mean a state in which hallucinations are accepted, of which the patient has no recollection on waking. When this stage is reached analgesia and anesthesia are easily effected, and the patient is sure to be *en rapport* with the operator. He is oblivious to all other persons until they are introduced to him.

It is therefore well to keep clearly in mind these two stages, catalepsy and somnambulism, as distinguishing mild and deep hypnosis.

It is usually unwise to carry the patient deeper than catalepsy at the first sitting, as there is something uncanny in feeling one's self in the power of another. As a matter of fact, unless the person has considerable knowledge of the subject, most operators simply talk to him for the first visit, explaining what is to be expected. He may be asked to close his

eyes and put himself in a passive state. He should be assured that suggestibility is well-nigh universal in healthy individuals, but that his coöperation is absolutely essential.

As soon as catalepsy has been secured one should say with some emphasis: "No one shall ever be able to hypnotize you against your will, or except for your good, or no one but your physician." This suggestion is very reassuring. This cataleptic stage is sufficient for giving many therapeutic suggestions, indeed when we treat of this, we shall see that a-hypnotic suggestions are made by many therapists, many claiming that the passive state is all that is required. It is surprising how easily analgesia to a pin-prick may be secured. Anesthesia or complete insensibility to contact is not secured short of somnambulism.

One would hardly like to depend on the analgesia for surgical purposes short of the somnambulic stage.

In treating a stricture of the tear duct in a child of twelve years, the probing was so painful that very little progress was made in several visits. Catalepsy with analgesia to the prick of a needle was easily secured. The writer then suggested that the probing would not be painful, at the same time massaging over the region of the duct. The child was perfectly conscious, and in response to the question said it did not hurt when the probe was forced thru a tough stricture, opening the duct to the nose. Nevertheless

altho she maintained it did *not* hurt, there was evident considerable muscular reaction.

It will be remembered that Esdaile's use of hypnotism was almost entirely as an analgesic in surgery. He devoted half an hour to the hypnosis as a routine measure, and there can be little doubt that somnambulism was secured.

Bramwell hypnotizes on several successive days before attempting any very painful operations. He has secured complete anesthesia in only about ten per cent. This uncertainty evidently lessens its value as a general anesthetic, but where it is effective it is devoid of danger, which cannot be said of chloroform and ether. Not only does the patient suffer no pain, but the reflexes are abolished. This is certainly objective proof of anesthesia.

Analgesia in surgery has been demonstrated over and over again before representative medical societies. At the Boston Homeopathic Medical Society a few years ago Prof. George H. Earl reported a dispensary confinement case, where it became necessary to use forceps with no ether at hand. The patient was hypnotized and the delivery was practically painless. This naturally leads us to inquire why normal childbirth cannot thus be made painless, and Bramwell quotes numerous instances of its successful employment.

I have seen no reference to its use preliminary to giving an anesthetic. It would seem that it might here be of greatest value, in reassuring the patient

and controlling the after vomiting. The value of hypnotism in medicine will be considered under "Suggestive Therapeutics."

The hypnotic control of the pulse has been frequently secured by the author. As an example a recent experience may be mentioned. When the subject, a medical student, had reached the somnambulic stage another physician was asked to take his pulse, but not to mention the result. It was then suggested that in ten minutes the rate would be increased ten beats per minute. The patient was left quietly reclining in an easy chair, no suggestions of an exciting or emotional nature being made. A second count showed the exact increase suggested. It was then suggested that in ten minutes the rate would be ten beats *less* than at first. The same physician announced the result as seven less.

Doctor Sidis and others have shown by sphygmographic tracings a marked change in the character of the curve under hypnosis. More interesting perhaps are the results of pneumographic tracings. The increased sensitivity of the hypnotic state is graphically shown by the great variations from the normal tracing caused by stimuli of various kinds. Thus laboratory results confirm the observations that suggestibility is greatly increased. The therapeutic bearing of this fact will be discussed under "Suggestive Therapeutics."

The transition to the alert stage seems somewhat contradictory. This has always impressed the au-

thor when telling a subject who has been put into a sound sleep that he can open his eyes and still remain asleep.

That something of the kind occurs to the subject is often evident from the slight hesitation which he shows. I have frequently said to a patient, "Your sleep is not quite like ordinary sleep because you can open your eyes. You can hear me speak to you, can you not?" His reply will often show considerable effort and the word "yes" may be whispered. This has been observed so often that one should be suspicious that he is being deceived if the subject should respond in a loud voice at first.

Hallucinations will now be accepted. These may be either positive or negative. That is, the subject may be told that he is looking at a beautiful landscape; this would be a *positive* hallucination. Or he may be told that the chair which stood in front of him has vanished, that there is no one present in the room; these are *negative* hallucinations.

This brings us to the subject of *rappport*. Before any suggestion of the kind is made the patient appears perfectly oblivious to the presence of all save the operator, and appears not to hear when the operator speaks to others than himself.

This *rappport* seems to be a phenomenon of hypnosis entirely independent of the suggestion. The operator can, however, introduce an observer either under his true name or fictitiously.

The *deductive* nature of the hypnotic state is universally recognized. For example, the subject is told that he is John L. Sullivan, and he immediately assumes his idea of the pugilist.

On one occasion in a public hall the writer saw a washerwoman taken on the stage and told that she was Susan B. Anthony, and informed that she was to address the audience on "Women's Suffrage." In the normal state probably no amount of persuasion would have induced the woman to say a word in public, and yet she bowed to the audience and made a very good speech. She believed herself to be the person named, and given this *premise*, *deduced* a logical sequence.

Suggestions should be made direct, emphatic, and oft repeated. Sidis has shown this to be in strong contrast to the normal state, in which suggestions are effective in proportion to their *indirectness*. For example, if you want your friend to whistle a tune, he would probably refuse your command, but if he be somewhat preoccupied, you pretend yourself the same, but carelessly whistle the tune, and the chances are that your friend will change his tune and whistle yours.

In like manner the mental processes differ. The conscious self reasons *inductively*. He builds up a conclusion by putting together separated and unrelated experiences. For example, Newton watching the apple fall conceives that there is a mutual attraction between the earth and the apple, then between

the earth and the sun, and concludes with a theory of universal gravitation.

It is claimed that the threshold of sensation is raised by hypnosis, that sight and hearing are more acute. This has not been personally demonstrated.

Post-hypnotic amnesia usually occurs without suggestion, but it can be either increased or diminished, by telling the patient that he will either remember or forget the events that transpire during his sleep.

Post-hypnotic suggestion is a very striking phenomenon. You suggest complete amnesia on waking. Then tell the patient that when you take out your pocket-handkerchief he will immediately get up and leave the room. When he wakes it is well to have one of the observers determine that amnesia is complete.

No matter what the subject may be doing, when you inadvertently give the signal he responds like a machine, and is entirely ignorant of the cause of his action. On a subsequent hypnosis, however, he would be able to tell you all about it.

This is the most effective way of reviving subconscious memories. Long forgotten happenings of childhood can be brought out. This has been utilized in discovering the causes of hallucinations and psychoses. So many experiments in the *post-hypnotic appreciation of time* have been made by many different observers, that we are forced to conclude that the power greatly transcends that of the

normal waking consciousness. A very simple way to test this is to suggest that the post-hypnotic suggestion shall be carried out at a *certain time*, instead of at some stated signal. My own experiments in this line have not been very extensive, but sufficient to convince me of the truth of the claim.

In one instance it was suggested that half an hour after waking, the subject, who was one of a company of professional friends, should become aware that his right shoe was hurting him; that it would feel like a stone or nail in his shoe, and that the discomfort would become so great that he would be compelled to take off his shoe and rub his foot.

After he waked, he remained seated with his back to the clock, and the half-dozen people present were listening to something which I was reading aloud. In exactly twenty-seven minutes, he was seen to look at his foot and move it uneasily in the shoe. The right leg was then raised and thrown across the other and the shoe moved with the hand. In about a minute he interrupted my reading by remarking aloud, "I never knew that shoe to hurt me before." Paying no attention to the remark, I continued reading, when he interrupted again by saying, "I wonder what it is." With some impatience I said, "I wish you would not interrupt me." "I haven't heard a word you have read," was the reply.

Some one suggested, "Perhaps you have a nail in your shoe." "I don't wear nailed shoes," was the

impatient reply. At this there was such a general laugh that he said: "Ah, I know, it is a suggestion, you want me to take my shoe off. Well, I won't do it."

He lighted a fresh cigar and smoked very vigorously for a few minutes, but while the company roared with laughter he took off his shoe and rubbed his foot. On being questioned afterward he said that he could have resisted, but he realized that he should be uncomfortable till he did it, and therefore obeyed.

This absolute obedience has been termed *automatism*, which is a subject demanding careful consideration, because of its important bearing on the possibility of *criminal suggestions*. It was formerly believed that once the subject succumbed to the operator he became his slave, absolutely unable to refuse any command. This belief is quite universal in the lay mind, and, I am sorry to say, is quite generally shared by the medical profession.

Bramwell has made most exhaustive experiments on this line, which have, I believe, conclusively shown that quite the reverse is true. He has adopted the very rational method of questioning the patient under hypnosis concerning his motives for action and refusing to act.

In the first place, it should be understood that good subjects frequently refuse suggestions from mere caprice. Numerous instances of this are on record. I do not refer to criminal suggestions, but

actions which are absolutely harmless. Bramwell mentions the case of a young girl who had many times carried out post-hypnotic suggestions. On this occasion he directed that on waking she should go to the sideboard and pour for herself a glass of water. Much to his surprise, the suggestion was not carried out. She was rehypnotized and asked why she had refused to obey. She said that she did not feel sufficiently acquainted with him to take such a liberty.

In my patient the impulse to take off the shoe would undoubtedly have been overcome had there been ladies present.

At a college society meeting I suggested to one of the company whom I had hypnotized that at a certain signal, after waking, he should go to the punch-bowl and take a drink out of the ladle. He took up the ladle full of punch, raised it as if to drink, then hesitated for several seconds, finally poured it into a glass and drank from it. No comment was made, but it was evident that the impropriety of the act prevented its execution.

The classic experiment of telling a subject that a lump of sugar is arsenic and that he is to poison his friend has been assumed to prove criminal suggestion. It will usually be carried out. The patient will also stab his friend with an imaginary dagger. But further questioning reveals the fact that the subject appreciates the distinction between these experiments and the real things.

Bramwell tells of an instance of a caretaker who had shown his pluck by shooting at some genuine burglars. He was afterwards hypnotized and was made to believe that some friends in an adjoining room were breaking and entering. The ball-cartridges had been secretly replaced by blanks, but he supposed the revolver still loaded. Instead of carrying out the suggestion, he very carefully laid the revolver away.

Popular literature furnishes innumerable instances of belief in this fallacy. Nearly all hypnotists of the present generation have believed it till experience has demonstrated the contrary. Bernheim formerly held this view quite strongly, but latterly admits that not more than four or five per cent. of his patients will accept criminal suggestion. Is it unreasonable to suppose that this percentage is *normally* criminally inclined?

As far as I am able to judge, the great majority agree with Bramwell, who says: "I have never seen a suggestion accepted in hypnosis which would have been refused in the normal state. I have frequently noticed increased refinement in hypnosis, subjects have refused suggestions which they would have accepted in the normal condition."

This may depend on the early education of the subconscious, the development of a finer sensibility than the later volitional years had been able to live up to. Probably all of us have had the experience

of attempting to silence the voice of conscience by reasoning with ourselves that the coveted sin wasn't so bad after all. If one has succeeded in convincing himself in this way, the laying bare of his subconscious nobler nature may reveal a higher type of manhood.

"The question as to whether hypnotism can be successfully employed for criminal purposes must be determined in each individual case by the character of persons engaged in the experiment." "If the subject be a criminal character he might follow the suggestions of a criminal hypnotist and actually perpetrate a crime."¹ In such a case a resort to hypnotism for criminal purposes would be unnecessary, except to abolish fear of detection. The effect upon the will of continued hypnosis is not proved to be detrimental.

If we accept the statement of Moll, that intelligent people and those with *strong wills* are more easily hypnotizable than the reverse, it would seem that this very strength of will is required to perfectly control one's inhibitory faculties, that extraneous thoughts — other ideas than those suggested — shall be held in abeyance. The proof of this statement is the fact that the good operator, whom it is tacitly assumed must be of strong will, may also be a very good subject.

Hypnotic experiments should be conducted with great care, to guard against erroneous conclusions.

¹ Bramwell : Hypnotism.

This point is well illustrated by the history of the development of the science.

One should constantly be on his guard lest he be deceived by the subject pretending influences which are not real. Until one has become somewhat expert, he should never employ a paid subject. It is advisable to experiment with a small company of friends, assuming the rôle both of subject and operator. The educational value of *being* hypnotized has not been properly recognized. In this way you have a practical knowledge of the phenomena which you witness in your subject.

Auto-suggestions and preconceived ideas are very important factors in producing unexpected results. The subject is vividly *alert* not only to the things you say but to your unuttered thoughts. It is not intended by this to claim *telepathy*, but we all unconsciously disclose our thoughts by gestures and inflections. This is illustrated by the "willing game." In this a person is brought into a room blindfolded, it having been arranged that he should find some article. One or two of the company who know what is desired take the "operator" by the hand, and all of the company concentrate their attention on the thing selected. With the attention thus fixed the "guides" unconsciously contract or relax their hand muscles, and really direct the operator to the desired spot.

This is known as "muscle reading," and often gives surprising results, but it does not prove telepathy.

It has been claimed that a hallucination of a coin can be doubled by a prism. With a real object a prism gives diplopia, and a patient who knows this property of a prism would by the deductive process perceive a double hallucination. It is possible to secure the hallucination of two coins without a prism, so we need not invoke the principle of false orientation of a hallucinatory image.

CHAPTER VII

SUMMARY

What is hypnotism?—Theories.—1766, Mesmer, animal magnetism.—Influence of heavenly bodies.—1851, Professor Gregory, "Animal Magnetism."—Influence of inanimate bodies.—Confirms Reichenbach's odyllic force.—Operator's will sufficient to control subject.—Defends phrenology, but suggestion *will* produce same results.—1843-55, Braid, three distinct theories: (1) Physical theory, "hypnotism" manipulation of cranium produces characteristic phenomena; (2) Substitute monoideism for hypnotism, preconceptions of subject, dominant ideas, suggested by operator, magnets, metals, and sealed medicines, inert except as vehicles of suggestion; (3) Double consciousness.—Modern theories.—Charcot, Salpêtrière, the discordant note.—Responsible for modern prejudices.—Bernheim, suggestion, the all-sufficiency of.—Sidis, laws of suggestibility.—Myers, subliminal consciousness.—Volition, subject *not* unconscious.—Supra-normal: clairvoyance, clairaudience, prevision, telepathy, the problem of personality.

THE acceptance of the phenomena of hypnotism as facts forces upon us the attempt to answer the question, "What is hypnotism?"

Mesmer's theory (1766) of animal magnetism, a fluid which was transferred from the operator to the subject, seems to have been held in more or less modified form by Esdaile and Eliotson.

William Gregory, professor of chemistry, Edinburgh University, published in 1851 his classic on

animal magnetism. In this no mention is made of the influence of the heavenly bodies, but he states in no uncertain terms his belief that some subtle fluid emanates from the body of the operator. For this he adopts the name *odylic force*, which had just been brought forward by Baron Reichenbach. This force resided, he believed, in numerous physical substances, especially in magnets, in which later it could be seen by sensitives as a red light at the north pole and a blue light at the south pole.

Gregory devotes a chapter to the confirmation of phrenology, stating the "facts" as follows: "It is really, in many cases, like touching the keys of an organ when the bellows are full of wind, and the sound instantly follows. If *Tune* be the organ touched, the subject forthwith breaks into song. If it be *Self-esteem*, he throws back his head, struts with immense dignity, and declares himself superior to the rest of mankind. Touch the organ of the *Love of Children*, and he dandles an imaginary babe, with most paternal affection. Touch *Benevolence*, the expression changes to that of compassion; his hand is thrust into his pocket, and held forth with all his store. Touch *Acquisitiveness*, the griping miser instantly appears, and with appropriate look and speech the money is restored to its original receptacle; it is well if the nearest object, however bulky, be not 'boned,' to use a slang but expressive phrase. If *Caution* be the stop touched, the music is the most distressing, often appalling pantomime

of fear or of misery. But if Hope be played on, the clouds vanish and joyous sunshine gilds every feature. Such are a few of the effects produced. It is unnecessary to say that I have done so in cases when no deception was or could be practised.”¹

Nevertheless, he states that a Mr. Lewis, a man “whose will is singularly powerful,” can call out the same faculty by touching many different parts.

So while there are many cases where “suggestion or the will of the operator or sympathy with him will suffice to explain the facts,” “there are other cases in which the explanation does not apply.” But the student of to-day *suspects* that he had *not* “taken all precautions to avoid the possibility of deception.”

One of his conclusions is “that not only the human body, but inanimate objects, such as magnets, crystals, metals, etc., exert on sensitive persons an influence identical, so far as known, with that which produces mesmerism.”

Altho he recognized the principle of suggestion, he evidently had no conception of its tremendous scope. It should be remembered that Braid’s “Neurypnology” had been published eight years previously, in fact Gregory mentions Braid’s “methods” as something different from animal magnetism. Evidently Braid did not appear so revolutionary to his contemporaries as he does to us. At first his principal claim was for the physical basis — that

¹ Gregory : Animal Magnetism, p. 89, ed. 1877.

mesmerism was the result of well-defined physical causes and not dependent upon any animal magnetism or odyllic force. He shared with many eminent men of his time a belief in phrenology. He contended that manipulations of the cranium produced mental and physical phenomena according to the part touched.

Braid certainly was imbued with the scientific spirit, he was a good example of the growing man. As new facts developed he adapted his theories till soon he had dropped the physical basis entirely. But it was this misconception which gained him a hearing with the scientific world. This with the new name made it "worthy of further investigation."

Altho Braid's theories were a regular development, yet they may be divided into three epochs, the first being that promulgated in "Neurypnology." The second was the repudiation of the term hypnotism on discovering that fixed gaze was sufficient to produce the state. Evidently this was not sleep, but concentration. Therefore he substituted the term *monoideism*, but *hypnotism* as a name had come to stay.

He proved that the phenomena were the result of *dominant* ideas, of which there are two classes, the preconceptions of the patient, and the direct and indirect suggestions of the operator.

He showed that wooden magnets were as efficacious as steel if the patient supposed them to be steel. He discovered that metals possess no char-

acteristic mesmeric properties, but are merely vehicles of suggestion.

About this time there was considerable discussion about the efficacy of medicine in sealed glass tubes. The evidence of medicinal value was proved, but it was also found that water could be substituted for the medicine, and if the patient were unaware of the change the same therapeutic results followed. That Braid advanced beyond this position was not generally known till Bramwell discovered some of his later writings, which either were never published or were but slightly circulated. The third phase of Braid's theory was the idea of double consciousness, which we shall see later is the most generally accepted to-day. While the modern theories exhibit minor differences, yet there is almost a consensus of opinion on the cardinal points.

This harmony is marred by one discordant note — Charcot and the Salpêtrière. Bramwell says: "The theories of this school are now almost universally discredited by those practically engaged in hypnotic work. Even as far back as the second International Congress of Psychology (London, 1892), they had almost ceased to attract attention." Nevertheless, Charcot has been very widely read, and I have yet to find an instance where a modern author refers to the "dangers of hypnotism," and its "hysterical-nature," which is not directly traceable to Salpêtrière.

For example, in Church and Peterson, "Nervous Disease" (1903), is the statement in reference to

susceptibility: "Those of mediocre self-consciousness, those accustomed to unquestioningly obey — hence children and some hysterics — are the most ready subjects. . . . There is no longer any doubt that its frequent repetition is harmful to the individual. It tends to destroy self-reliance, and to make patients imaginative, weak-minded, and neurasthenic. It also has a tendency to bring discredit upon its employer." The adoption of Charcot's classification shows the source of the information on which these misstatements are based. The question of susceptibility has been sufficiently considered, and the "disrepute" is evidently being fostered by the Charcot theory.

It is therefore important to state this in some detail, in order to refute its various dogmas.

1. Hypnosis is a morbid condition which can be induced only in the hysterical.

2. Hypnosis can be produced by purely physical means, that is, a person could be hypnotized without his being aware of the fact.

3. Hysteria may be produced in trying to induce hypnosis.

4. Magnets and metals induce characteristic phenomena.

In order to understand the "hysterical" bias, it should be borne in mind that the patients at Salpêtrière are probably all hysterical, and very naturally they might under hypnosis exhibit many of the symptoms of *their* abnormal state, not of the normal

state of healthy individuals. Then, again, it seems strange, if hysterics are alone susceptible, that the data should have been so largely drawn from "one patient who had long been an inmate of the institution." One would suppose that hypnosis would have been successful in every case. Does not this very paucity of cases prove the *insusceptibility* of hysterics?

The testimony of almost all other experimenters is that over seventy-five per cent. of healthy individuals are susceptible. One needs but to read the history of Braid's life, and note how he proved the only virtue in magnets, metals, etc., was due to the suggestion imparted by the operator or the preconceived ideas of the patient, to be somewhat wearied at the rejuvenation of the error at Salpêtrière.

That hysteria might be caused by lack of caution, seems, *a priori*, not to be impossible, but I have yet to learn of an authentic case. The widespread influence of these false ideas is simply another illustration that a falsehood travels so much faster than its refutation that the latter never catches up.

With the ground thus cleared we are ready to consider the tenable theories. The key-note of the Nancy school, or rather of Bernheim, is suggestion. "Every one is suggestible, and if you take some one and suggest to him to become more suggestible, that is hypnotism. You suggest to the patient to go to sleep, and he obeys and is asleep."

The trouble with this theory is that there is an alert

stage, in which the subject reasons and evidences heightened sense perception. Increased suggestibility is certainly a manifestation of hypnosis, but this depends upon increased sensitivity.

Sidis has studied the laws of suggestibility in both the normal and hypnotic state, and formulates them as follows:

In the waking state. — Suggestion is successful in direct proportion to its *indirectness*, and the subject's *inattention*. That is, if preoccupied, he can be more easily influenced to do unconsciously the thing suggested.

In the hypnotic state. — Suggestion is effective in direct proportion to its *directness* and subject's *attention*.

The only conception with which the phenomena can be harmonized is the idea of subliminal consciousness so ably brought out by the late W. H. H. Myers. Sidis has elaborated this, and it is now — shall we say established? — well, certainly a good working hypothesis. Altho it was mentioned in the chapter on “Consciousness,” it may not be amiss to emphasize it by repetition. Every sight, sound, smell, taste, or tactile sensation which the nerve end organs are capable of appreciating, is conveyed to the brain, there to be stored away as a memory. A large part of these facts never rise into consciousness, or if consciously perceived at the time, are soon relegated to the subconscious. This subliminal consciousness presides over most of the body functions,

some of which have passed absolutely beyond conscious control, like the inhibitory control of the heart-beat. Others, like respiration, are still subject to conscious control, if the conscious sees fit to exercise it.

The conscious self decides which of the many sense perceptions are relevant to the subject upon which the attention is concentrated, and ignores the remainder. That is, the human will not only decides whether or no it will *accept* as motives to action certain sense perceptions, but, moreover, refuses to *listen* to many.

It is well known that a willingness to be hypnotized is absolutely essential. Now this willingness is a throwing off one's normal seclusion, and inviting the senses to bring in their retainers. This willingness to *listen* to suggestions implies the probability of accepting them, unless they offend the moral sense.

One has temporarily established the operator as the doorkeeper of his mental sanctuary, and has agreed to be polite to his guests, so long as they do not transgress the laws of good breeding. This condition explains why, at first, most hypnotists supposed their subjects to be unable to resist suggestions, but afterward discovered that volition was only *suspended*, not lost. The volition seems to be able to refuse improper suggestions either by arousing the subject or by changing the alert stage into one of lethargy.

Amnesia in the waking state of the events of the hypnotic does not prove that the subject was unconscious *at the time* of their occurrence. In fact, at a subsequent hypnosis the memory of all that transpired in the former hypnosis is perfect, which proves quite the opposite of unconsciousness.

It must be admitted that our modern conception of the hypnotic state as one in which the subject *knowingly* accepts ludicrous suggestions, forgets his own name, accepts hallucinations, and then forgets it all on waking, necessitates some seeming contradictions. It involves a deal of subtle reasoning.

A number of instances are on record where this double consciousness has become so dissociated as to give rise to double personality — two individuals using the same brain and each unconscious of the other. The case of the Rev. Mr. Hanna is a sample.

Dr. Morton Prince¹ has reported a case where hypnosis revealed four distinct aggregations of consciousness, all of which were sufficiently characteristic to be called personalities.

The problem of personality is manifestly beyond our scope, but we must consider the implication of the theory of double consciousness. The subconscious appreciation of time has been referred to. The ability to wake at a certain time is a very common experience. Many eminent men have stated that they habitually prepare speeches by a process which necessitates what Carpenter called “uncon-

¹ The Dissociation of a Personality, 1906.

scious cerebration." The essential data are noted and then the mind — the conscious mind — drops the matter. When the occasion arrives the speech is made or the paper is written with a lucidity which indicates that some power has been at work during the subject's conscious neglect. Not only does hypnotism reveal a heightened moral sense in the subconscious, but Sidis has proved by the sphygmograph and pneumograph a hyperesthesia of all the senses.

Concerning the possibility of clairvoyance, clairaudience, prevision, and telepathy, an endless amount of study and investigation is required before one has any right to an opinion or *can* have an intelligent opinion. The Society for Psychic Research has accumulated a vast amount of evidence which has convinced a portion of the members of these supernatural occurrences. Another portion still feels that the evidence is insufficient.

One point should never be lost sight of, that any of these questionable phenomena, to be of evidential value to a third party, should be carefully recorded and attested at the time. Any case of prevision should be so recorded and witnessed prior to the time of fulfilment.

Hypnotism at a distance is, I believe, unproved. A subject might be given a post-hypnotic suggestion that at a certain time he would fall asleep, and in this sense hypnotism beyond the range of personal contact of operator and subject is quite possible.

The believers in animal magnetism were wont to claim that the operator's will was obeyed quite as perfectly as his spoken commands. I do not remember seeing this claim put forth by modern hypnotists.

The greatest caution is here necessary lest one betray his feelings by inflection or gesture. Many of the errors of recent experiments have arisen from the erroneous conception that the subject was unconscious. The fact that he is hyperesthetic should be constantly borne in mind.

CHAPTER VIII

SUMMARY

Psychotherapeutics. — Definition of therapeutics. — Drugs, surgery, orthopedics, electricity, mechanotherapy, refraction, hydrotherapy, massage, in all a *physical* element. — Psychotherapeutics, elimination of the *physical* agent. — Man a suggestible animal. — Historical: "Thy faith hath made thee whole;" royal touch; shrines; prayer cure; Christian Science; "mental healing;" Whipple, New York; Newcomb, Boston. — Claim everything, but refuse to substantiate. — Silent treatments, accord with Sidis' law. — Indirect suggestions, accord with Sidis' law. — Bernheim, a-hypnotic suggestion. — Hypnosis necessary to overcome auto-suggestions. — Method of giving treatments. — Sphere of psychotherapeutics: subconscious memory of pain, hallucinations, insomnia, neuralgia, constipation. — Drug habit and degeneracy, Quackenboss. — Dubois: nervous diseases. — Organic disease? — Anderson's "muscle bed." — Thinking out an exercise. — An adjunct to general medicine.

PSYCHOTHERAPEUTICS

THERAPEUTICS is the science which treats of remedial agents, first and foremost among which, from time immemorial, have been drugs. We have extended the definition to include surgery, electricity, orthopedics, and mechanotherapy. The correction of refractive errors by means of lenses may very properly be classed as orthopedics. In all of these well-recognized divisions of therapeutics there is

evident a *physical* means, namely, the drug, the knife, the electricity, the mechanical appliance.

As suggestive therapeutics means the elimination of these physical agents, and the use of mental forces, psychotherapeutics would seem to be the most logical term. *Psychics* is certainly the antonym of *physics*.

The mental control which every individual exercises over his various functions is a matter of common knowledge. The proposition that this normal control can be interfered with by outside influences needs no proof.

Now if disease *sometimes* results from abnormal mental influences, what could be more rational than to expect to cure by reestablishing the mental tone? The history of civilization is replete with instances of the application of this principle, tho it is only in recent years that we have come to recognize the underlying truth that "man is a suggestible animal."

An adequate historical review of this subject would fill many volumes. Religious devotees in all ages have practised the healing art. It is evident that at the beginning of the Christian era it was a matter of common belief. Successful healing was regarded as the criterion of the truth of the religion.

Jesus seems to have clearly perceived the truth, when he said to the woman who touched the hem of his garment, "Thy faith hath made thee whole."

The account reads that this power was transferred to the disciples, who "laid hands on the sick and they recovered."

The doctrine of the divine right of kings carried with it the belief in the royal touch. Andrew D. White says: "This mode of cure began, so far as history throws light upon it, with Edward the Confessor in the eleventh century, and came down from reign to reign, passing from the Catholic saint to the Protestant debauchees upon the English throne, with ever-increasing miraculous efficacy.

"Testimony to the reality of these cures is overwhelming. As a simple matter of fact there are no miracles of healing in the history of the human race more thoroly attested than those wrought by the touch of Henry VIII., Elizabeth, the Stuarts, and especially of that chosen vessel, Charles II.

"Altho Elizabeth could not bring herself to believe in the realities of these cures, Doctor Tooker, the queen's chaplain, afterward Dean of Litchfield, testifies fully of his own knowledge of the cures wrought by her, as also does William Clowes, the queen's surgeon. Fuller in his *Church History* gives an account of a Roman Catholic, who was thus cured by the queen's touch *and converted to Protestantism*. Similar testimony exists as to the cures wrought by James I. Charles also enjoyed the same power in spite of the public declaration against its reality by Parliament. . . . But the most incontrovertible evidence of this miraculous power is

found in the case of Charles II., the most thoroly cynical debauchee who ever sat on the English throne before the advent of George IV. He touched nearly one hundred thousand persons, and the outlay for gold medals issued to the afflicted on these occasions rose in some years as high as £10,000. . . . William III. evidently regarded the whole thing as a superstition, and on one occasion is said to have touched a patient, saying to him: 'God give you better health and more sense.' Whiston assures us that this person was healed notwithstanding William's incredulity. This curative power was, then, acknowledged far and wide by Catholics and Protestants alike, upon the Continent, in Great Britain and America, and it descended, not only in spite of the transition of the English kings from Catholicism to Protestantism, but in spite of the transition from the legitimate sovereignty of the Stuarts to the illegitimate succession of the house of Orange, and yet within a few years after the whole world held this belief, it was dead, it had shrivelled away in the growing scientific light at the dawn of the eighteenth century."¹

But humanity has not lost its faith in divine healing. Even in the twentieth century the world has its shrines, where we have the best of evidence for believing many genuine cures are wrought. Every year pilgrimages are made to the shrine of St. Ann de Beaupré, near Quebec. Scarce a week passes

¹ History of the Conflict of Theology and Science in Christendom.

but the press has some notices of the prayer cures of the prophet Sanford at Shiloh, Me.

The unprecedented growth of Christian Science among the most intelligent class of the community is proof of an underlying curative principle.

Mr. Alfred Farlow, who seems to be the spokesman for Boston, says: "Various magnetic and mental forms of treatment have long been in vogue, but their success has never been sufficiently uniform to command any great amount of attention.

"Mrs. Eddy, the discoverer and founder of Christian Science, was once treated by a magnetic practitioner and temporarily relieved, but the benefits were not permanent. After her discovery she recognized that magnetic treatment depended upon the human will, in contradistinction to the Divine Mind, and therefore fell short of the exalted spiritual method which was employed by Jesus and the Apostles, hence its inadequacy."¹

It is difficult to comprehend the subtle distinctions of the various sects of psychic healers. Many philosophers have struggled with the problem of the relation of the human will to the divine, and to some of us common mortals it seems somewhat doubtful if these people can always distinguish between the manifestations of human souls and the presence of the great Over Soul.

Very much like the Christian Scientists are the mental or "metaphysical" healers, so called.

¹ *The Medical Student*, April, 1906.

Altho their teaching is quite similar to the views of the followers of Mrs. Eddy, they do not seem to regard her in the light of a discoverer, characterizing the "truths" she has uttered as a mild modification of theosophy. They do not deny the existence of disease, but regard it as an *unnecessary* evil — the product of fear, worry, and unrest. They exalt the preëminence of the individual's soul, its communion with the Over Soul, from which it can draw unlimited power, and the absolute necessity of cultivating a serene and calm inner consciousness, by which they claim man regains his birthright of presiding over his physical states.

The philosophy is lofty, ethical, and, in the main, true. These people, like the scientists, give silent treatments, both patient and healer sitting with closed eyes. A prescription is given to take home, of which the following is a sample:

"I trust every organ,
I govern myself with Patience and Power."

This indirect suggestion is, as we know, most effective for the waking consciousness, and if frequently repeated is likely to become indelibly stamped in the subliminal consciousness.

Mr. Charles Newcomb, of Boston, says: "Plain suggestions of confidence, patience, gladness, and decision often bring us back to the trail we have lost thru the uncertainty of our own power and freedom."¹ The philosophy seems to be very largely

¹ Newcomb: *The Discovery of a Lost Trail*.

Emersonian. These people take Emerson literally, where many have supposed he was dealing in poetic images. It is a philosophy of life itself, and the mental power over bodily states is only one of its many beneficent phases. Its watchword is: "No regrets for the past, no fears for the future, live in the present *above* time."

The writer had the pleasure during the spring of 1906 of listening to a course of lectures by Mr. Newcomb. He is a man of great breadth of culture, and an earnest student of all matters psychic. But the extravagant claims for the all-sufficiency of psychic healing is almost painful. He speaks with the most absolute assurance concerning technical subjects, little realizing the implications.

For example, he claims to have cured near-sightedness, when upon inquiry he has no evidence to offer which is of the slightest value to an investigator. He claims to be able to diagnose pathological conditions by psychic sight or clairvoyance, but refused to make the experiment with an eye case which the writer proposed to send him. He would, however, *treat* a case which was sent to him by an oculist, provided the patient was really desirous of being treated, but experimentation was ruled out.

In 1897 Leander Edmund Whipple established in New York the American School of Metaphysics. Both didactic and correspondence courses are offered. In the preface to "The Philosophy of Mental Healing," Mr. Whipple says: "The writer enter-

tains the opinion that absolute truth can safely invite any amount of investigation, together with the most thoro and accurate tests that can be applied thru logic, reason, and philosophical thought or in scientific experiment of the most accurate description." Noticing in one of his announcements that, among other anomalies of the eyes, astigmatism could be cured by his system, the writer communicated with him, asking if he had any cases of this defect which had been examined by a competent oculist both before and after the cure.

Astigmatism is a deformity of the front of the eye — the cornea — and can be accurately measured by the keratometer, which is an instrument in nearly every oculist's office. Altho it may vary some in the course of years, oculists cannot cure it, they can only correct it with glasses.

The following very courteous reply was received:

"Your esteemed favor was duly received. I do not know of tests made under the full requirements suggested by your question, tho many cases have similar testimony in a partial way. It is difficult to bring about from the standpoint of medical diagnosis and of metaphysical practise. Tests for the sake of experiment never succeed. There is mental law underneath it I feel sure. Consequently such records as you ask for are not obtainable as far as I know. More complete methods will become established in time, I believe. The mental law that

can result in a radical cure will not withstand much of the different kind of action in the way at the time and results do not appear unless the action is very clear and free. Naturally enough, the medically trained mind thinks that the same methods of examination and test as applied in medicine should apply with metaphysics, but the conditions are vastly different. An experimenting thought destroys most of the power. I recognize the value of such tests and records, but I have not seen yet how they can be brought about. Abnormal physical conditions have their complete correspondences in mental states or experiences which act as causes. After these causes are stopped in action physical conditions can become adjusted to the changed mentality by natural process and without further intervention from outside. This I believe to be a fact in mental therapeutics. The eyes being so closely associated with the nervous system are responsive to about every change in mental action, for the mind controls the nervous system. I have seen total blindness of one eye restored upon the removal of the mental shock of a severe injury to the cheek under that eye, and similar results in many varieties of supposed physical conditions.

“Yours sincerely,

“LEANDER EDMUND WHIPPLE.”

To a “medically trained mind” this seems like begging the question. This propensity to “claim

everything " which is so universal with the practitioners of prayer cure, Christian Science, and mental healing seems inconsistent with the high moral tone which these people exhibit. In charity one is forced to believe that they are honest but are self-deceived. The analogy between this state of mind and the deductive faculty exhibited by the hypnotized individual is very striking. He is no longer disturbed by the restraints of the critical and judicial normal consciousness. May it not be that this " confidence " contributes greatly to success?

A-hypnotic suggestion is a means of treatment recognized by many of the medical profession. It is the method used very largely by Bernheim. Doctor Petersen, in describing his visit to Nancy in 1891, says: " From bed to bed we went, and after the individual case was examined, Bernheim would address the sufferer in a gentle but firm voice, in no way different from his conversational rhythm. He told them to sleep either at once or before he left the ward, suggesting the alleviation or disappearance of their pains, made them imaginary tonics, at times touched the seat of pain, and assured them that when their slumber had ceased — he fixing its duration as well as the right time for it — they would then feel comfortable and in a happier mood." ¹

Doctor Petersen continues: " The idea therefore

¹ Translation of *Hypnotism and Its Application to Practical Medicine*. Wetterstrand.

that to receive a suggestion, which is to be carried out even to an act, necessitates a previous deep unconsciousness, is erroneous in many respects.

The patient has entered into the receptive state by what is explained as an inhibition of the cerebral cortex, and a potent force has taken possession of him by directing both the mental and physical functions."

The success of this method depends entirely upon the receptivity of the patient, and upon his intellectuality. He must certainly be above the average intelligence or have unlimited confidence in his physician to make it effective. The majority of chronic cases are dominated by preconceived ideas, which they are unable to suppress, and which the operator is unable to overcome. In this emergency there is needed some means of increasing the susceptibility to healthful suggestions, and of counter-acting harmful ones. Whatever may be one's view as to the exact nature of hypnotism, it is universally admitted that it increases the patient's suggestibility.

Pyschics has taken quite a hold of our Boston mind, and the intelligent patient has seen enough cures by other than medicinal means to be already convinced of a mental control of body functions. So that often it is only necessary to explain to him the reflex action of the lower brain, and tell him that by properly conducted treatments you can increase his subconscious control of the various somatic functions which make for health. He is then put in a comfortable chair, the head resting, eyes closed,

and told to banish from his mind all extraneous thoughts, to make himself passive, so as to receive any suggestions you have to offer.

You then talk to him in a quiet but reassuring way, accompanied by passes over the affected part, expatiating upon the profoundness of mental control, if he only put himself in the receptive state. This is manifestly a-hypnotic treatment. If stronger effects are desired, hypnosis should be induced by any of the methods previously mentioned. In this state the suggestions should be direct, in the form of commands.

Granted this fact of the subconscious control of functions and bodily states, granted that hypnosis lays the subconscious under the operator's control, what could be more logical than that healthful suggestions could be thus made which would be effectively carried out?

Every one who has given attention to this subject has found that he can make *auto-suggestions*, which are helpful or harmful as he wills. This refers not alone to mental states, but to physical health. Is it not possible that the coming man will become so proficient in marshalling the resources of his subliminal consciousness that he will become his own physician, exercise an increased power of resistance, and ward off many diseases? Hypnosis to-day furnishes a means of aiding the subconscious mind of the patient, thus working out practical cures, and in it there would seem to be great possibilities.

Without attempting to define the limitations of psychotherapeutics, it is generally admitted that its special sphere of usefulness is with functional and nervous diseases. The writer reported before the Boston Homeopathic Medical Society some years ago¹ a case of subconscious memory of pain in the eyes, which yielded to a very few hypnotic treatments after glasses and remedies had failed.

Sidis has reported some interesting cases of epilepsy, which upon hypnosis proved to be of psychic origin. The patients no longer remembered the cause of the first attack, but under hypnosis the whole history was obtained. Counter suggestions in this state entirely eradicated the abnormal influence, and the seizures ceased. Along this same line is the work being done by Prof. James J. Putnam, of Harvard, in the treatment of hysteria by "Freud's Method of Psycho-Analysis."²

Insomnia is one of the very intractable symptoms of many diseases and is also idiopathic. Wetterstrand says: "I sincerely believe there is no better remedy for insomnia than hypnosis, and that it is absolutely harmful to prescribe soporifics, because they only strengthen the invalid's belief that he cannot go to sleep without the accustomed dose." He reports eight failures in forty-two cases treated.

In neuralgias he says: "The remedy has seldom been a failure when the patient slept soundly."

¹ *N. E. Medical Gazette*, June, 1899.

² *Journal of Abnormal Psychology*, April, 1906.

Cures from epilepsy and chorea are reported by Wetterstrand.

In stammering Wetterstrand cured fifteen, forty-eight treated. Neurasthenias are difficult cases to treat, as they are hard to hypnotize. The same applies to hysteria. Morphinism has been dealt with very successfully.

Doctor Quackenboss, New York, has reported great successes in breaking up the cigarette habit and other forms of intemperance. There was published in a New York paper a report of an interview with Doctor Quackenboss concerning his reviving a moribund patient, who had been calling for him previous to sinking into the comatose state.

The work of Dr. Paul Dubois, professor of neuropathology at the University of Berne, has, during the present year (1906), been brought to the attention of English readers thru the translation of the French edition of his "Psychic Treatment of Nervous Disorders." Accepting the Bernheim doctrine of suggestion, and believing that every one is suggestible, he ignores all subtle and subconscious methods, and treats these cases "in the open" by what he calls the "reëducation of the reason." After showing his patient that his nervous affection is the result of his misconceptions, he proceeds to reason with him. First of all he teaches him the philosophy of life, adapting the lesson to the patient's mental status. Then he elucidates the power of the mind over somatic functions, and builds up the

patient's confidence, by seizing upon and emphasizing every evidence of success in the relief of distressing symptoms.

There is something almost naïve in the absolute candor with which he treats his patient, and as one turns the pages of his book he is conscious of a feeling of chagrin in discovering that the laborious and roundabout methods of our ordinary use of psychotherapy are usually superfluous.

Upon special occasions, he has recourse to hypnotism and a-hypnotic suggestion of the Bernheim type.

While he believes that nervous diseases are essentially mental in origin, and should therefore be treated by mental means, he nevertheless uses drugs for special emergencies.

Isolation of the patient from family and friends and the almost routine use of the Weir Mitchell rest treatment are very important factors of his success, but "the only thing that will assure the future of the patient is a rational moralizing psychotherapy which will change the psychopathic mentality which has determined his symptoms."

Doctor Anderson, medical director of Yale gymnasium, has constructed a table finely balanced, on which the student lies down upon his back. The center of gravity is determined and then some problem is given him to solve. That blood rushes to the head is proved by a rise in the center of gravity toward the head. If, on the other hand, he is

told to go thru a leg exercise mentally, not really moving a muscle, the center goes toward the feet, showing the mental control of the blood supply.

The possibility of either raising or lowering the rate of the heart by suggestion to the hypnotized individual has been previously mentioned in the chapter on the "Phenomena of Hypnosis." If the trophic and nutritional centers are under the control of the subconscious, one is not justified in concluding, *a priori*, that regenerative effects — organic diseases — are beyond the *possibilities* of psychotherapeutics.

Psychotherapeutics is not a panacea. — The question as to what extent the physician should make use of this valuable accessory to his *armamentarium* must be left entirely to his individual judgment and experience. The same statement applies as to how much surgery he should do. It takes courage and self-reliance openly to advocate and practise it. One will undoubtedly be misunderstood by many of his professional brethren and by many of his patients. He may gain an unenviable reputation of having discarded all *physico*-therapy.

On the other hand, the reputation of being versed in the methods of mental healing may save one many a patient who would otherwise seek his psychotherapy elsewhere. Had the profession taken a more friendly attitude toward the subject the "metaphysician" would have less reason for existence.

While it is unwise and an encroachment upon individual liberty to attempt by legislation to prevent the various forms of mental healers from practising, it would certainly be conducive to public welfare if the healing art in all its branches were confined to properly educated and licensed practitioners of medicine. Those who know its limitations would not waste valuable time in futile attempts at psychotherapy, while the disease was passing beyond the curable or operable stage.

There is a class of physicians to-day which reiterates the verdict of the French Academy, "all due to the imagination," with a sneer of contempt. Granting this therapeutic power of the imagination, does it not behoove the profession to make of it an ally, instead of allowing it "to go about seeking whom it may devour?" Is our success so universal with old chronic cases that any means known to be curative can be ignored?

CHAPTER IX

SUMMARY

The psychic element in the practise of medicine. — The personality of the physician. — Genuine good-will. — Healthful suggestions. — Suggestions adverse to health. — Diet. — Suggestion present in all forms of therapeutics: in surgery, in refraction, in electrotherapy, in massage, in materia medica. — The hidden suggestion. — Popular belief in efficacy of drugs. — “*Post hoc ergo propter hoc.*” — “It cured me.” — Profession not given to critical analysis. — Responsible for erroneous theories. — Shattuck: “Some of our patients get well.” — Flint’s law, the natural history of disease. — Percy: eight therapeutic influences: (*a*) Natural history of the morbid processes; (*b*) The recuperative energies of the organism; (*c*) The favorable agencies of hygiene; (*d*) The power of personal magnetism, in the practitioner; (*e*) Suggestion and auto-suggestion; (*f*) Faith; (*g*) Courage; (*h*) Drugs. — Attempt to eliminate suggestion from drug pathogenesis. — The reproof by the Am. Hom. O. O. and L. Soc. — The placebo, a vehicle of suggestion.

THE PSYCHIC ELEMENT IN THE PRACTISE OF MEDICINE

PERHAPS the most potent means of giving healthful suggestion is the personality of the physician himself. How often one hears a patient remark of his beloved physician: “It does me good to see him come in.”

Learning and medical skill are certainly desirable qualities, but unless optimism and geniality are part

of his equipment one had better confine himself to laboratory and didactic medicine.

Brilliant scholarship never made a successful practitioner. Genuine good nature, a hopeful manner, and an honest desire to relieve suffering humanity should be cultivated to their fullest degree. If the study of mental physiology does nothing more than to inculcate this principle into the very fiber of one's being, it will have served no mean purpose.

The selection of a certain physician presupposes a special confidence in his skill. Whether the means employed be drugs, surgery, or orthopedics, a lack of this confidence seriously cripples his efforts.

On the wall of a sanitarium near Boston is the following stanza :

“Talk Health, the dreary, never ending tale
Of mortal maladies is worn and stale,
You cannot charm or interest or please
By harping on the minor chord — disease.
Say you are well, or all is well with you,
And God shall hear the words and make them true to you.”

The author has changed the last two lines as follows :

When asked if well, if not too ill, say “yes,”
And haply, e'en this slight untruth may bless.

The stanza is printed on a small card which is frequently given to a patient inclined to hypochondria, with the suggestion that he take it home. It sometimes occasions a smile, but I firmly believe that great good is accomplished.

Hudson, in "Law of Mental Medicine," shows how nearly all our articles of diet, one after another, have come to be regarded as unhealthful. The physician is prone to assume that the particular food which causes indigestion in himself must therefore be harmful to others, and warns all his patients and friends against eating it. There is a widespread failure to realize that "one man's meat is another's poison." When two or three happen to agree upon the indigestibleness of anything, and repeat their fears to one who indulges it, the suggestion is apt to be accepted by the subliminal consciousness, and the normal secretion of the digestive ferments may be inhibited, and another witness against the innocent offender is gained.

Conning over the symptoms of disease often leads to a morbid introspection, which is a veritable looking for trouble. The quack advertiser is keen enough to use this method of malevolent suggestion, and thus lures his victim, at least, into the symptomatology of a chronic disease.

Interwoven with all forms of physical therapeutics are the threads of suggestions. These are obtained from the direct statements of the physician, from his manner whether hopeful or discouraged, and also from the preconceived ideas of the patient.

The recovery from morbid symptoms which frequently follows a simple anesthetizing with pretended surgical interference, or simply exploratory incision, is so well recognized that we are apt to

lose sight of its significance. In mechanical therapeutics the suggestive element is less conspicuous, but frequent examples have occurred in the practise of the writer.

A patient came with well-marked symptoms of eye-strain, glasses were prescribed, and the symptoms entirely disappeared. Leaving off the glasses would cause a return of symptoms, again wearing them the pain ceased. The case was one of astigmia, and the lenses for the two eyes were quite different. At a subsequent visit, there having been no return of the symptoms, it was discovered that, in repairing the frames, the optician had carelessly transposed the lenses, and yet the patient felt sure that she could not get along without her glasses. They were a positive detriment to vision when in the wrong positions.

Probably no physician who has used electricity has failed to note the suggestive element. Undoubtedly the buzzing of the faradic current and the sparking of the high frequency make these forms especially potent.

Massage calls the patient's attention to the part rubbed. Is it unreasonable, in the light of Doctor Anderson's experiments, previously mentioned, to assume that the subliminal can be thus roused to greater therapeutic power?

When we come to the realm of *materia medica* we find such a confusion of "post hoc" and "propter hoc" that there is the greatest diversity of opinion

among the profession concerning the value of drugs as a whole, and what drugs are indicated in certain conditions or diseases, and by what rule this shall be determined, instead of depending on the empiricism which has led so many into sloughs of despair in the past.

Of the various sects, homeopathy has grown to be a respectable minority of the body medical. Here too, as with the other school, is a recognition of this misleading principle. Dr. William C. Goodno, professor of medicine in Hahnemann Medical College, Philadelphia, is quoted as saying: "There is a serious weakness of many of our workers in *materia medica* in the way of credulity. The greed for provings leads many able men to accept too readily symptoms having a most doubtful relationship to the drug supposed to cause them."¹

This does not mean that drugs are not curative, but it does imply that, in this department, medicine is still more of an art than a science.

We have a few specifics, and a growing list of drugs scientifically adapted to cure certain morbid conditions. A very commendable effort has been made to put the homeopathic *materia medica* on the same basis.

Under the auspices of the American Homeopathic Ophthalmological, Otological, and Laryngological Society, with the coöperation of the national and several State societies, the effect of belladonna on

¹ *Medical Visitor*.

the human system and on animals has been exhaustively studied by a method originated by Prof. H. P. Bellows of Boston.¹

In order that the suggestive element might be entirely eliminated, only one person in each of the eleven cities where the experiments were made knew what drug was being administered. The subjects experimented upon were examined by specialists in each department before, during, and after the tests. The most approved scientific methods were used to determine the objective symptoms, and only such subjective symptoms were accepted as trustworthy as were experienced by a majority of the provers.

The chapter on "The Effects of Belladonna upon Animal Tissues" is contributed by Dr. Solomon C. Fuller, pathologist of the Westboro (Mass.) Insane Hospital.

The experiments were carried out in a thoroly scientific manner, and the work is a valuable contribution to toxicology. In this department suggestion was certainly eliminated.

THE HIDDEN SUGGESTION

Since the days of Galen the race has been more and more imbued with the idea of the efficacy of drugs, till to-day a little sugar pill is loaded with the suggested efficacy of generations. This it is which gives the successes of the quack "cure-alls." Given

¹ Test Proving of the O. O. and L. Society.

sufficient advertisement, and a pungent taste or smell, and the testimonials are soon forthcoming.

To cure "speedily, gently, and permanently," is the desideratum of the medicine. Having obtained this result, we are all of us prone to rest content, and have little interest in studying our cases critically to determine if the particular means employed were the effective agent. Most diseases are self-limited, and we all admit in the *vis medicatrix naturæ* a powerful ally. We are also thankful for any psychic element which may have contributed to the happy result.

So long as the average physician exhibits this frame of mind, can we wonder that Christian Science and mental healing are gathering adherents from the most intelligent class of the laity?

It is this principle of *post hoc ergo propter hoc* which has *established* (?) so many misconceptions and false theories as truths. Most Christian Scientists whom I have met are sure of their *science* because they have been cured. The theory has been accepted because "it cured me."

Some one has facetiously remarked that there are "three kinds of lies: white lies, black lies, and statistics," and to a certain extent this is undoubtedly true. Statistics often fail to tell the "*whole truth*," altho they may tell "nothing but the truth."

In order to *add* to the sum of human knowledge, the statistician must possess a judicial mind, and

must never allow his preconceptions or his inclinations to influence him "to make up a case."

Dr. Austin Flint was one of the first to enunciate a principle which is truly scientific. He advocated a more careful study of the natural history of disease, the average duration of a large number of cases of a given malady when no medicine was given. Then he compared with this the average of an equal number of cases of the same disease, where medical treatment was had, contending that unless the duration or severity or mortality was less under treatment than without, one was not warranted in concluding that his interference had been beneficial.

Happily this inference is generally justifiable. Granting this to be true, a second question is presented to the candid truth-seeker, *viz.*: What was the curative agent?

Dr. F. B. Percy, professor of materia medica, Boston University School of Medicine, says: "Let us admit from the beginning that in the cure of the sick many influences must be considered.

"(a) Natural history of morbid processes.

"(b) The recuperative energies of the organism.

"(c) The favorable agencies of hygiene.

"(d) The power of personal magnetism in the practitioner.

"(e) Suggestion and auto-suggestion.

"(f) Faith.

"(g) Courage.

"(h) Drugs.

“Here then is the problem which faces every fair-minded man, to apportion to each of these influences its due weight.”¹

Four of the above list, namely: (d) The power of personal magnetism in the practitioner, (e) Suggestion and auto-suggestion, (f) Faith, (g) Courage, are evidently psychic influences.

While it is difficult to eliminate suggestion from practical therapeutics, and indeed undesirable so to do after having established therapeutic facts, it is *easy* by the placebo to eliminate the drug. The practical man takes things as he finds them and makes the best of them. The majority of one's patients believe in the unlimited efficacy of drugs, so the practical disciple of suggestion will recognize in the placebo a preëxistent vehicle for suggestion.

There should be as much care, and precise instructions given, as tho one were administering toxic medicine. The patient catches from one's manner a suggestion as to the powerfulness of the drug.

The late Prof. J. Heber Smith was accustomed to advise: “Until you have studied your case carefully, use a placebo.”

The late Prof. Conrad Wesselhoeft once remarked of a certain high dilutionist, who always said “There” as he flicked the powder on the patient's tongue, “There was more medicine in the ‘There’ than there was in the powder.”

¹ *Boston Med. and Surg. Journal*, March 20, 1906.

Dr. Frederick C. Shattuck, professor of clinical medicine, Harvard Medical School, says: "Let us use suggestion as far as is necessary to subserve the best interest of our patients; but let us strive without ceasing to separate in our own minds mere suggestion from actual drug action. Few are capable of either imparting or receiving a suggestion strong enough to prevent a hypodermic of apomorphia from producing active emesis, or zinc sulphate given by the mouth for that matter. But we have all seen cases in which the patient was relieved by a hypodermic of plain water, which he or she believed to contain morphia."¹

CONCLUSIONS

The psychic element is present in all therapeutics, even in surgery, refraction, electrotherapy, and massage.

It is *the* therapeutic element in Christian Science, mental healing, etc.

It and not the drug is probably the active agent in most cures by quack medicines.

It and not the drug is probably the active agent in many medicines prescribed by qualified physicians.

It is impossible to eliminate it from any form of therapeutics.

The majority of humanity is so constituted that

¹ *Boston Med. and Surg. Journal*, March 20, 1906. The Value of Drugs in Therapeutics.

the "placebo" is the most feasible form of administering suggestion.

There is another side, however, to the placebo question. Dr. Richard C. Cabot, instructor in medicine, Harvard Medical School, has stated the case very forcibly.

"Drug therapeutics in cases in which drugs do no good represent either mental fatigue or mental myopia on the part of the physician: sometimes mental fatigue, because the easiest thing one can do for a patient when tired is to write a prescription; sometimes mental myopia, which prevents the physician from seeing that the habit of giving placebos and of prescribing a medicine for every symptom leads straight to the 'patent medicine' habit.

"Why do people take 'patent medicines' and expect us to give them a drug for every symptom? They were not born with a desire for nauseous mixtures. They acquired it under instruction, ultimately our instruction. From the patient's point of view the net result of the doctor's expensive visits is too often a row of medicine bottles on the shelf. The thrifty patient thinks he sees a way to get the net result of the doctor's efforts without so much expense. Why not save the middleman, he says to himself, and get the goods direct? So arises the habit of going to the apothecaries or to the 'patent medicine' vendors for a cure. When we stop giving placebos, cease acting as middlemen for drug-

makers, and admit to their rightful place the non-medicinal branches of therapeutics, we shall deal a powerful blow at the 'patent medicine' evil."¹

Plato says: "Beauty we love best because we see her clearest. Wisdom with bodily eyes we cannot see or terrible had been the loves she had inspired."

¹ *Journal of the American Medical Association*, June 2, 1906.

THE END.

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Index

- Ameba, Sensation of, 3.
Anesthesia, Hypnotic, 71; Esdaile, 72; Author, 83; Earl, 84.
Animal sagacity, Burroughs, 6-8; James, 9-11.
Animal magnetism, 96-98.
Bellows, Prof. H. P., Drug proving, 130.
Bernheim, 74, 117.
Bramwell, 75, 84, 92.
Blind spots, 55-56.
Braid, James, 66, 72, 99, 100, 102.
Burroughs, John, Do animals reason? 6-10.
Cabot, Dr. Richard C., Medicine habit, 135.
Cerebration accompanied by association of nerve cells, 2.
Charcot, Hysteria, 78, 100, 101.
Christian Science, 112.
Concept, Etymology and definition of, 12.
Consciousness, Facts of, 3; Of environment, 3; The moment, 24.
Controlled reading device, Author's, 64.
Decentration, 31.
Distance, Estimation of, Monocular, 57; Binocular, 62.
Dreams, Dissociation, 25; Causes of, 25, 26; Duration of, 27-28.
Dubois, Psychic treatment, 121-122.
Eddy, Mrs. Mary Baker, 112.
Farlow, Christian Science, 112.
Fiske, John, Cosmic philosophy, 39.
Flint, Natural history of disease, 132.
Fuller, Dr. S. C., Toxicology, 130.
Genius, The unaccountable, 32-33.
Goodno, Prof. William C., Credulity, 129.
Gregory, Prof. William, Animal magnetism, 96-98.

- Habit, Founded on instinct, 17; Age of forming, 17; Economic value of, 19; Of reading, 20.
- Hudson, Law of mental medicine, 127.
- Hypnotism — Historical, 66-76; Mesmer, 67-69; Eliotson, 71; Esdaile, 72; Braid, 72, 73; Liébeault, 74; Bernheim, 74; Bramwell, 75; Quackenboss, 75; Sidis, 75; Charcot, 100, 102; Wetterstrand, 120, 121.
- Hypnotism — Anesthesia, 71, 72, 83, 84; Methods, 76-78; Susceptibility, 78-80; Phenomena, 81-84; Theories, 96-107.
- Instinct, Animal, 5; Common to man and beast, 6; The basis of habit, 14.
- Inverted image and erect vision, 43-54; Foster's explanation, 43; Martin's explanation, 44; Poullaine's explanation, 52-53; Souter's explanation, 53-54; Author's explanation, 46-50.
- James, Prof. William, 2; Animal sagacity, 9-11.
- Ladd, Professor, Definition of psychology, 1.
- Memory, Method of cultivating, 21.
- Mesmer, 67-70.
- Metaphysical healing, Newcomb, 113-114; Whipple, 114-116.
- Moment consciousness, Sidis, 24.
- Myers, W. H. H., The subconscious, 103.
- Newcomb, Charles, Metaphysical healer, 113-114.
- Nancy school, 102.
- Patent medicine habit, 135.
- Percy, Prof. F. B., Curative influences, 132.
- Perspective, Stereoscopic, 63.
- Petersen, Dr. Henrik G., A-hypnotic suggestion, 117.
- Prince, Dr. Morton, Dissociation of a personality, 105.
- Preyer, Infantile instincts, 16.
- Protoplasm, Sensation of, 3.
- Psychic element in medicine, 125-135.
- Psychic Research Society, 106.
- Psychotherapeutics, 108-124; Scope of, 120-123.
- Pulse, Hypnotic control of, 85.
- Putnam, Prof. James J., 120.
- Quackenboss, Dr. John D., Intemperance, 121.
- Reading habits, 20.
- Reason in animals, Burroughs, 6-10.

- Reason, An attribute of man alone, 5.
Reason and instinct, 4.
Reasoning, Deductive, of hypnotic state, 87 ; Inductive, of normal state, 87.
Recepts, Definition and examples, 12 ; Acquired instincts, 13.
Reflexes, Congenital and acquired, 15.
Relativity, Doctrine of, 36-39.
Retinal shadows inverted, 56.
Royal Touch, Historical, 110, 111.
Salpêtrière school, 100, 102.
Sensation of protoplasm, 3.
Shattuck, Prof. F. C., Suggestion, 134.
Sidis, The moment consciousness, 24 ; Dreams, 25 ; Decentration, 32 ; Epilepsy, 120 ; Suggestion, 75, 103.
Special senses, Evolution of, 35.
Spencer on heredity, 14.
Sight, refinement of touch, 42 ; Experimental psychology, 55-63.
Stereoscope, Phoro-optometer, 64.
Subconscious cerebration, Examples of, 30.
Subconscious mind, Habits of, 22 ; Education of, 29-30 ; Myers, 103.
Subliminal cerebration, 23, 32-33, 103.
Suggestion, Post-hypnotic, 88-90 ; Improper, not accepted, 91-92 ; Criminal, 93.
Sutherland, Professor, Definition nervous system, 3.
Tactile sense, precedes others, 41.
Telepathy, 34.
Test proving, belladonna, 129-130.
Thought, not molecular motion, 2.
Tyndall, Brain and consciousness, 3.
Vision, Erect with inverted image, 43-54.
Weismann, Heredity, 14.
Wetterstrand, Hypnotic practise, 120.
Whipple, Leander Edmund, Metaphysical healer, 114-116.
White, Andrew D., 110.

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